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# THE INDIA WEATHER REVIEW

FOR THE YEAR

1919

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UNDER THE DIRECTION OF

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# ANNUAL SUMMARY, 1919.

## INTRODUCTION.

**T**HE present account of the meteorology of 1919 is based on revised data and is intended primarily for scientific reference; for those needing prompt information the Annual Supplement to the Indian Daily Weather Report was issued on January 14, 1920.

Several systems of territorial division of India have come into use from time to time for meteorological purposes, each having been adopted to meet the needs of some particular set of data. A certain amount of confusion had been found to result from the consequent want of uniformity of boundaries, and, with a view of obviating the inconvenience caused, the Government of India in 1907 authorised the adoption of the following system of division :—

Chief political divisions.	Sub-divisions.
Burma . . . . .	Bay Islands. Lower Burma. Upper Burma.
Eastern Bengal and Assam . . .	Assam. Eastern Bengal. Bengal. Orissa. Chota Nagpur. Bihar.
Bengal . . . . .	United Provinces, East. United Provinces, West. Punjab, East and North. Punjab, Southwest. Kashmir.
North-West Frontier Province . . .	North-West Frontier Province. Baluchistan.
Sind . . . . .	Sind.
Rajputana . . . . .	Rajputana, West. Rajputana, East. Gujarat.
Bombay . . . . .	Konkan. Bombay Deccan.

Chief political divisions.	Sub-divisions.
Central India . . . . .	Central India, West. Central India, East. Berar.
Central Provinces . . . . .	Central Provinces, West. Central Provinces, East.
Hyderabad . . . . .	Hyderabad, North. Hyderabad, South.
Mysore . . . . .	Mysore. Malabar.
Madras . . . . .	Madras, Southeast. Madras Deccan. Madras Coast, North.

From the 1st April 1912 a fresh territorial division of Eastern Bengal and Assam and Bengal was sanctioned by which Eastern Bengal was restored to Bengal, while Orissa, Chota Nagpur and Bihar were constituted into a separate province under the name of Bihar and Orissa. The present arrangement is shown below :—

Chief political divisions.	Sub-divisions.
Assam . . . . .	Assam.
Bengal . . . . .	Bengal.
Bihar and Orissa . . . . .	Orissa. Chota Nagpur. Bihar.

In the present review the new division has been adopted throughout.

The system of division is illustrated in Plate I at the end of this Annual Summary, and its relationship to the old system of divisions which was adopted for the tables of the 'Geographical Summary,' given in former issues can be obtained by reference to pages 9 to 14 of Volume III of the Indian Meteorological Memoirs.

The data of Table B in the monthly reviews and in the present annual part are obtained, with a few exceptions, from the observations telegraphed daily to Simla for publication in the Daily Weather Report. The maximum and minimum temperature data of the second class observatories derived from these telegraphic reports and given

in Table B, occasionally differ to some slight extent from the corresponding means in Table A. The chief reason for this is that in Table B the daily or 24-hour period is assumed to end at 8 hrs. and in Table A at midnight [except for rainfall the period of which ends at 8 hours], and hence the maximum temperature in Table B for any month of 31 days at any station gives the mean for 31 periods of 24 hours ending at 8 hours of the 31st and in Table A for the same number of 24-hour periods ending at midnight on the 31st, and virtually, therefore, of a monthly period one day in advance of the former. Similarly for months of 28, 29 or 30 days.

### Annual Summary, 1919.

*General summary of weather conditions.*—The usual winter rains in northern India were above the average owing to the very heavy rain in January. Rainfall was deficient during the hot weather period, but it was fairly abundant during the monsoon months, in spite of the fact that the monsoon retreated from north-west India well before the usual time. The Peninsula and the central parts of the country had on the whole

heavier rain than usual during all the four periods into which the year is divided. The year's fall over the plains of India as a whole was 9 per cent. in excess.

Four storms appeared in the Bay of Bengal during the year and three in the Arabian Sea. One of the former which crossed into east Bengal in the last week of September caused immense destruction of life and property in that area.

### SOLAR AND MAGNETIC ACTIVITY.

#### REPORT FROM KODAIKANAL OBSERVATORY.

During the year 1919, phot heliograms were obtained on 333 days, and spectroheliograms of the sun's disc in K light

on 323 days, of prominences in K light on 248 days, and of the sun's disc in H<sub>a</sub> light on 257 days.

#### SUMMARY OF SUNSPOT AND PROMINENCE OBSERVATIONS.

*Sunspots.*—The following table shows the monthly numbers of new groups observed at Kodaikanal, and their

distribution between the northern and southern hemispheres. The mean daily numbers of spots visible are also given:—

TABLE I.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
New groups .	24	16	28	18	16	32	18	19	10	16	12	33	235
North . .	11	11	14	8	7	18	7	3	6	7	8	11	104
South . .	13	5	9	10	9	19	11	17	13	9	4	13	131
Daily numbers	3.5	2.2	4.4	3.5	4.7	6.4	4.0	4.3	2.6	3.9	2.7	3.2	4.1

Compared with the year 1918 there is a general decrease in spot activity amounting to 29 per cent. in the case of new groups. The decrease is much greater for the northern hemisphere than for the southern and there results a considerable preponderance of activity in the south.

The approximate mean latitude of the spots was  $10^{\circ}4$  in the northern and  $12^{\circ}5$  in the southern hemispheres; a decline of  $1^{\circ}4$  and  $2^{\circ}1$  respectively compared with the figures for 1918.

A remarkable spot group was formed about August 12 on the east limb, on the 14th displacements of the brightly reversed  $H\alpha$  line ranging from 6 Å towards red to 5 Å towards violet were observed at various points in the group. During the September apparition the group had become resolved into two large single spots very near together but on opposite sides of the equator.

The number of bright reversals of the  $H\alpha$  line observed in the neighbourhood of spots was 296 whilst the number of displacements of this line recorded near spots was 180 of which no less than 136 were towards red. There were 57 dark reversals of  $D_3$  observed.

**Prominences.**—There has been a slight decrease in prominence areas and a considerable reduction in numbers compared with the previous year. The mean daily areas derived from the Kodaikanal photographic records are as follows:—

TABLE 2.

—	North.	South.	Total.
1919—January to June ...	1.55	1.81	3.36
" July to December	1.96	2.09	4.05

The mean daily numbers recorded decreased from 13.6 for the first half of 1919 to 11.3 for the second half; the decrease is mainly in the number of small prominences.

Prominence activity has been considerable in the equatorial regions and as far as latitude  $40^{\circ}$ ; beyond this latitude a rapid decrease is shown, and at  $80^{\circ}$  the activity practically ceases. Between  $60^{\circ}$  and the poles very small prominences or transient jets were recorded.

Metallic prominences greatly increased in frequency compared with the year 1918 and prominences showing displaced lines were also more frequently recorded than in the previous year. No displacement exceeding 6 angstroms at  $H\alpha$  was seen. There was the usual slight excess of displacements towards red, 54 per cent. of the whole number showing motion away from the Earth.

Prominences projected on the disc as absorption markings gave the same latitude distribution as those observed at the limb. The mean areas are about 3 per cent., and numbers 17 per cent. less than in 1918; the decrease is therefore mainly in the number of smaller markings as in the prominences at the limb.

The largest prominence photographed during the year attained its greatest development of 12 square minutes of arc on May 29 when a great part of it became detached from the Sun and ascended into space. The angular rotation speed of the prominence, when visible as an absorption marking between May 7th and 13th, was found to be  $14^{\circ}28$  per diem, in agreement with the rotation speed of the reversing layer.

Twenty-six "great" and 176 "moderate" magnetic storms were registered during the year, a larger number of each designation than were recorded in 1918.

The storm commencing August 11, 12h 28m I. S. T. (6h 58m G. C. T.) was perhaps the greatest storm recorded since 1909 September 25. A large and very active spot group was developing at the east limb on the 12th.

T. ROYDS,

*Acting Director,*

*Kodaikanal and Madras Observatories.*

### Report from the Bombay Observatory.

#### ALIBAG MAGNETIC RECORD, 1919.

The mean values of the magnetic elements obtained from all days in the year 1919 are as follows:—

Mean easterly declination . . . .	$0^{\circ} 24' 29''$
" Horizontal force . . . .	0.36999 c.g.s.
" Vertical force . . . .	0.17067 c.g.s.
" Inclination . . . .	$24^{\circ} 49' 8''$

During the year there were 96 calm days, 248 days of small, 17 days of moderate, 3 days of great and 1 day

of very great disturbance as against 115 calm days, 231 days of small, 17 days of moderate and 2 days of great disturbance in the previous year.

The following table, prepared in accordance with the suggestions made by the International Commission, Terrestrial Magnetism, represents the magnetic character of each day during the year:—

TABLE 3.—*Representing the magnetic character of the day during the year 1919.*

Date.	MONTH.											
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1 . .	1	1	2	1	1	1	1	1	0	1	0	0
2 . .	0	1	2	0	2	1	1	1	1	1	0	0
3 . .	1	1	1	0	1	1	1	1	1	2	1	1
4 . .	2	1	1	1	1	1	0	1	1	1	2	1
5 . .	2	1	1	0	1	1	0	1	0	2	0	1
6 . .	1	1	1	1	1	1	0	0	1	2	1	1
7 . .	1	0	1	1	1	0	1	1	2	1	0	1
8 . .	1	0	1	1	0	1	1	1	1	1	1	1
9 . .	1	0	0	0	1	1	1	1	1	1	1	1
10 . .	0	0	0	1	1	1	1	1	1	1	0	1
11 . .	0	0	1	1	0	1	1	2	1	1	1	1
12 . .	1	0	1	1	1	1	1	2	0	0	1	1
13 . .	2	1	1	1	1	1	1	0	1	0	0	1
14 . .	1	1	1	0	1	0	1	1	1	0	0	1
15 . .	1	1	1	1	1	1	0	1	1	1	0	2
16 . .	1	1	1	1	1	0	0	0	1	1	1	1
17 . .	1	1	1	1	1	1	1	1	1	1	1	0
18 . .	1	1	0	1	1	1	1	1	1	1	1	0
19 . .	1	0	1	1	1	0	1	1	2	1	0	1
20 . .	1	1	2	1	1	0	1	1	1	1	0	1
21 . .	1	2	1	1	2	1	0	0	1	0	0	1
22 . .	1	1	2	1	1	1	1	0	1	2	1	1
23 . .	1	1	1	1	1	1	1	1	1	1	1	1
24 . .	1	0	0	1	1	1	1	1	2	0	1	1
25 . .	0	0	1	1	1	1	0	1	1	0	1	1
26 . .	0	0	0	0	1	1	1	1	1	1	0	0
27 . .	0	1	1	1	1	1	1	0	0	1	0	1
28 . .	1	2	1	0	0	1	0	1	0	1	0	0
29 . .	1	—	1	1	0	1	1	1	0	1	0	0
30 . .	1	—	1	1	1	0	1	1	1	0	1	0
31 . .	1	—	1	—	1	—	1	0	—	0	—	0
Sum . .	28	20	30	28	29	24	23	26	26	26	17	23

In the above table 0 represents calm day.

" 1 small disturbance.

" 2 larger disturbance.

Days are reckoned from 6 h. 51 m. to 6 h. 51 m. of local civil mean time corresponding to 0 h. to 0 h. of Greenwich civil mean time.

The following is a list of days during the year 1919 selected as "quiet" from the Alibag records, as suitable locally for the determination of the magnetic diurnal inequalities:—

TABLE 4.

MONTHS.	Selected quiet days.					
	1919.					
January . . . . .	2	10	11	26	27	
February . . . . .	8	9	11	19	25	
March . . . . .	9	11	13	18	26	
April . . . . .	3	5	15	26	28	
May . . . . .	1	7	11	28	29	
June . . . . .	8	14	16	19	20	
July . . . . .	5	6	16	19	28	
August . . . . .	6	7	15	22	31	
September . . . . .	1	5	12	28	29	
October . . . . .	10	12	14	21	24	
November . . . . .	5	7	15	20	28	
December . . . . .	1	2	18	28	31	

The following table gives the corrected monthly mean values of the several magnetic elements and of the summed ranges of the horizontal force.

TABLE 5.

Months.	ABSOLUTE VALUES OF				HORIZONTAL FORCE.	
	Horizontal force.	Vertical force.	Inclina- tion.	Easterly declina- tion.	Summed ranges.	Summed ranges (smooth- ed).
1919.	C. G. S.	C. G. S.	°	'	C. G. S.	C. G. S.
January . . . . .	0.36887	0.17026	24 46.6	0 26 26	0.00238	0.00326
February . . . . .	0.36888	0.17031	24 47.0	0 25 54	0.00297	0.00328
March . . . . .	0.36890	0.17046	24 48.0	0 26 6	0.00347	0.00331
April . . . . .	0.36899	0.17046	24 47.7	0 25 21	0.00374	0.00330
May . . . . .	0.36893	0.17060	24 49.0	0 25 13	0.00296	0.00327
June . . . . .	0.36923	0.17068	24 48.5	0 24 37	0.00403	0.00328
July . . . . .	0.36918	0.17074	24 49.2	0 24 10	0.0415	0.00329
August . . . . .	0.36894	0.17077	24 50.3	0 23 55	0.00367	0.00332
September . . . . .	0.36891	0.17081	24 50.7	0 23 49	0.00290	0.00339
October . . . . .	0.36892	0.17091	24 51.4	0 23 10	0.00281	0.00343
November . . . . .	0.36909	0.17093	24 51.0	0 22 35	0.00352	0.00344
December . . . . .	0.36911	0.17117	24 52.7	0 22 32	0.00291	0.00340

TABLE 6.—Smoothed summed range\* of horizontal force.

(Continuation of table 536 in the Colaba Magnetic Data 1846—1905.)

Unity = 1 = 0.00001 c.g.s.

Months.	January.	February.	March.	April.	May.	June.	July.	August.	Septem- ber.	October.	November.	December.	Year.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1905 . . . . .	294	295	297	300	307	311	322	321	320	320	322	321	311	
1906 . . . . .	318	316	314	312	304	294	295	299	301	302	301	301	305	
1907 . . . . .	300	299	305	310	315	323	326	323	318	314	313	314	318	
1908 . . . . .	317	320	314	308	306	301	298	294	293	294	296	295	303	
1909 . . . . .	269	284	290	296	297	301	302	301	298	289	280	274	292	
1910 . . . . .	272	272	263	254	252	247	244	244	245	244	244	243	252	
1911 . . . . .	239	234	230	227	223	217	212	207	203	203	202	202	216	
1912 . . . . .	204	205	204	205	208	211	215	219	222	223	223	224	214	
1913 . . . . .	223	224	226	225	222	221	221	220	219	220	222	224	222	
1914 . . . . .	236	229	231	231	233	234	235	238	242	246	251	257	238	

\* The summed range figures are the sums without regard to signs of the twenty-four ordinates of the diurnal inequality; smoothed summed ranges are derived by taking overlapping means of twelve consecutive monthly values and reducing them to the proper epoch, so as to eliminate the annual variation.

## ANNUAL SUMMARY, 1919.

Months.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1915 . . . . .	264	268	274	282	288	290	288	288	294	300	308	308	287
1916 . . . . .	302	300	297	294	295	297	299	302	303	305	309	316	302
1917 . . . . .	325	334	345	356	365	377	391	400	403	402	400	397	375
1918 . . . . .	392	389	381	373	369	361	350	342	336	332	327	324	356
1919 . . . . .	326	328	331	330	327	328	329	332	339	343	344	340	333

T. K. CHINMAYANANDAM,  
Director,  
*Bombay and Alibag Observatories.*

## Nocturnal Radiation.

Observations of the terrestrial radiation thermometers, which are, as a rule, not very reliable, were recorded during the year 1919, at the following stations:—

Srinagar.                    Calcutta (Alipore).  
Lahore.                    Bombay.

The following Table 7 gives the average data of past years for the above stations; and Table 8 the departure from the normal.

TABLE 7.—Average depression of mean monthly and annual nocturnal radiation temperature below mean monthly and annual minimum spade temperatures.

Station.	Number of years observations used.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Srinagar . . . . .	21—26	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦
Lahore . . . . .	42—43	9·6	9·4	9·0	9·3	9·0	6·8	4·1	4·2	6·6	9·8	10·8	10·1	8·2
Calcutta (Alipore) . .	42—43	7·4	6·9	6·0	4·5	3·1	2·1	1·9	1·9	2·5	4·3	6·3	7·7	4·5
Bombay . . . . .	44	9·5	8·9	8·1	6·8	4·4	3·0	2·5	2·7	3·3	6·1	8·9	9·8	6·1

TABLE 8.—Departures from the averages of Table 7 of mean monthly and annual depression of nocturnal radiation temperatures in 1919.

STATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Srinagar . . . . .	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦
Lahore . . . . .	-4·8	-6·7	-4·9	-3·2	-3·3	-2·5	-2·1	-4·9	-3·9	-2·3	-1·7	-6·0	-3·9
Calcutta (Alipore) . .	-1·6	+0·5	+0·1	+0·2	-0·2	+0·2	-0·8	-0·9	+1·2	+1·5	+0·3	-1·6	-0·1
Bombay . . . . .	-0·4	+0·1	+0·6	+0·3	+1·4	+0·6	-0·1	-0·8	+0·3	+0·5	-0·8	+0·1	+0·2

## Temperature of the ground.

Observations of the temperature of the surface of the ground were recorded during the year 1919 at four stations, Lahore, Jaipur, Calcutta (Alipore) and Bombay; and of the temperature underground at Bombay only.

The thermometers used for the purpose are verified standard mercurial thermometers with attached scales of porcelain, the scale being engraved also on the tube.

At Lahore the surface thermometer is read four times daily; at Jaipur at 10 and 16 hrs., and at Calcutta at 13 hrs. 45 mins. At Bombay the two nearest to the surface are read five times a day, the deeper instruments being read once only.

The thermometers below the surface have their bulbs protected with pointed copper shoes which rest on ground at the bottom of a wooden tube, inserted to the specified depth and projecting six inches above the surface, the upper ends being closed by a cap of metal or wood.

An analysis of underground temperature observations by Mr. R. Ll. Jones (*Meteorological Memoirs*, Volume XV, Part III) lead to inconsistent results due probably to irregularities from percolation of rainfall as well as to imperfections in the mode of measurement. Hence the departures from the averages of past years are given in the table below as more likely to give indications of value than the actual temperatures recorded. The number of years included in the averages in the different cases lies between 34 and 40.

The thermometer at Alipore is exposed in a new site from 24th November 1915, as in the old site the bulb was in the shade of the branches of a tree. The departures in the table are based on averages based on 40 years which include the low temperatures recorded in the old site. As this is misleading, the monthly departures from the averages of the five years 1916 to 1920 are given here: these are  $-1\cdot6$ ,  $+8\cdot1$ ,  $+8\cdot2$ ,  $+1\cdot2$ ,  $+3\cdot3$ ,  $+0\cdot5$ ,  $-0\cdot3$ ,  $+0\cdot1$ ,  $+2\cdot9$ ,  $+6\cdot1$ ,  $-2\cdot7$  and  $+1\cdot5$ .

TABLE 9.—Departures from normal of the mean monthly and annual temperatures of the air and of the ground in 1919.

STATION.	JANUARY.	FEBRUARY.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	YEAR.
LAHORE	•	•	•	•	•	•	•	•	•	•	•	•	•
	{ Air . . .	+0·4	0	+0·1	-2·2	-1·0	+5·6	+1·5	-1·6	+0·1	0	-0·7	-1·6 +0·1
JAIPUR	{ Surface . . .	+2·3	+2·0	+1·0	-3·0	-2·3	+5·6	-0·2	-4·9	+1·0	+2·6	+2·5	+0·5 +0·6
	{ Air . . .	-0·2	-1·0	+0·2	-2·8	-2·0	+3·0	-0·2	-2·4	-1·9	+0·1	-1·3	-2·3 -0·9
CALCUTTA (ALIPORE)	{ Surface . . .	-1·2	+4·3	+3·5	-1·6	-4·6	+5·1	-4·4	-9·0	-2·0	+4·9	+1·2	-1·5 -0·4
	{ Air . . .	+2·4	0	+2·1	0	+0·8	-0·3	+0·6	+0·7	+0·5	+1·2	+1·2	+0·3 +0·8
BOMBAY	{ Surface . . .	+16·7	+28·1	+24·6	+9·6	+9·1	+8·1	+4·0	+3·1	+7·1	+14·8	+11·4	+20·3 +12·7
	{ Air . . .	+0·4	-0·1	-0·6	-0·3	+0·7	+0·9	+0·9	+0·4	+1·4	+1·4	+1·9	+0·4 +0·6
	1 inch deep . . .	+0·5	0	-0·5	-0·2	+0·8	+1·2	+1·2	+0·6	+1·4	+1·1	+1·7	+0·2 +0·6
	9 inches . . .	+1·8	+1·3	+0·5	+1·1	+2·0	+2·2	+1·9	+1·8	+2·4	+2·5	+3·0	+1·8 +1·9
	1 foot 8 inches deep . . .	+2·7	+2·6	+2·2	+2·9	+3·2	+3·2	+2·7	+2·9	+2·8	+3·0	+3·2	+2·9 +2·9
	5 feet deep . . .	+2·8	+2·6	+2·3	+2·0	+1·8	+2·1	+2·0	+2·4	+2·5	+2·6	+2·4	+2·6 +2·8
	11 . . .	+1·0	+1·1	+1·6	+1·7	+1·5	+0·8	-0·4	-0·4	+0·6	+1·1	+1·5	+1·4 +1·0

## Temperature.

The methods of exposing the thermometers at observatories in India were described in pages 18-19 of the Annual Report for 1890.

The method of deducing the daily and monthly means from the observed reading of the instruments was described in pages 6 and 7 of the Monthly Weather Review for January 1919.

The departures from normal of the mean temperature of each month given in Table A of the Monthly Weather Reviews are deduced by a comparison of the actual monthly means with the normal monthly means given in the "Indian Meteorological Memoirs," Volume XVII, pages 16 to 20.

The departures obtained by a comparison of these normal means with the actual monthly means in Table A of the Monthly Weather Reviews for the year are given in Table 10.

In Table B, published in each Monthly Review, the mean temperature of the day is calculated, as in the Daily Weather Report, by the formula :—daily means =  $\frac{\text{maximum} + \text{minimum}}{2}$ .

It differs from the true daily mean by amounts varying slightly with the season. In Table B of the Monthly Weather Reviews of the year 1919 are given the departures from normal of the monthly means of daily maximum and minimum temperatures, as well as the departures of the monthly means of daily mean temperature given by the formula  $\frac{1}{2}(\text{maximum} + \text{minimum})$ .

In the great majority of cases the normals of maximum and minimum temperatures for the stations in Table B, are derived from the data of the 33 year period 1878-1910; in the case of some of the most recently started observatories the period is shorter, but it is never less than five years. The normals are given in the "Indian Meteorological Memoirs," Volume XXII, Part III, pages 426-457.

Tables 11 to 16 give summaries of the temperature departure data for each month of the year 1919 and for the whole year. In the first set of tables (Tables 11, 12 and 13) the departure data are given for the 15 chief political divisions, and in the last three tables (Tables 14 to 16) the data are given for the 33 sub-divisions.

TABLE 10.—*Departure from normal of monthly and annual mean air temperatures at first and second class observatories in 1919.*

DIVISION.	STATION.	JAN.	FEB.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUG.	SEP.	OCT.	NOV.	DECEMBER.	YEAR.
BENGAL . . .	Calcutta . . . . .	+2.4	0	+2.1	0	+0.8	-0.3	+0.6	+0.7	+0.5	+1.2	+1.2	+0.3	+0.8
PUNJAB . . .	Lahore . . . . .	+0.4	0	+0.1	-2.2	-1.0	+5.6	+1.5	-1.6	+0.1	0	-0.7	-1.6	+0.1
RAJPUTANA . . .	Jaipur . . . . .	-0.2	-1.0	+0.2	-2.8	-2.0	+3.0	-0.2	-2.4	-1.9	+0.1	-1.3	-2.3	-0.9
BOMBAY . . .	Bombay . . . . .	+0.4	-0.1	-0.6	-0.2	+0.7	+0.9	+0.9	+0.4	+1.4	+1.4	+1.9	+0.4	+0.6
MYSOOR	Bangalore . . . . .	+3.8	+2.7	+0.7	+2.1	-0.2	-0.4	+0.6	+0.4	+1.3	+1.4	+1.0	+1.6	+1.3
MADRAS . . .	Madras . . . . .	+2.6	+2.0	-0.7	+1.1	+0.5	+0.2	-0.9	+2.1	-0.6	+0.6	+1.6	+1.4	+0.8
KASHMIR . . .	Srinagar . . . . .	...	...	...	+0.1	+0.1	+4.0	+4.6	+4.2	+1.1	+1.5	+0.1	-0.7	...
HILL STATIONS, EXCLUDING KASHMIR AND BALUCHISTAN	Katmandu . . . . .	0	+1.5	+2.4	+0.3	+1.6	+1.6	+1.3	+2.8	-0.4	+2.8	+2.7	-0.6	+1.3
EAST INDIA . . .	Seychelles . . . . .	+1.8	+1.2	+2.4	+2.8	+1.9	+2.7	+1.7	+0.8	+0.7	+1.2	+2.1	+2.2	+1.7
EAST INDIA . . .	Mauritius . . . . .	+1.5	+1.2	+1.1	+0.8	-0.3	+1.1	-0.7	0	+0.2	-0.6	+0.6	+0.9	+0.5

TABLE 11.—*Departure of the mean monthly and annual maximum temperature from the normal in the fifteen chief political divisions of India in 1919, as given by all observatories.*

Division.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma	°	°	°	°	°	°	°	°	°	°	°	°	°
Assam	+0·7	+0·2	+1·4	+0·5	+2·1	+1·0	+0·1	-0·5	+0·2	+1·6	+0·7	-0·4	+0·6
Bengal	+1·6	+1·9	+4·9	+1·5	+1·7	+1·5	0	+3·1	-1·9	-1·4	-0·3	+0·4	+1·1
Bihar and Orissa	+0·7	-0·6	+2·9	-0·3	+1·3	-0·5	-0·1	+0·4	-0·5	+0·9	+0·1	-0·2	+0·3
United Provinces	0	-2·4	+1·5	-0·9	-0·7	-3·0	-0·8	-0·4	-0·3	-0·2	-0·5	-0·3	-0·7
Punjab	-0·1	-1·4	+0·7	-2·3	-0·5	+2·2	-1·9	+0·4	0	-0·4	-0·3	-1·1	-0·4
North-West Frontier Province	-0·7	-0·3	-0·2	-3·0	-2·8	+4·0	-0·6	-2·1	-0·2	+0·5	-1·5	-4·1	-0·9
Sind	-1·2	+1·7	-0·2	-0·9	-0·7	0	+0·2	-0·1	-0·8	+0·2	0	-2·0	-0·3
Rajputana	-1·2	+0·3	-0·3	-2·4	-1·3	+1·6	-1·9	-2·7	-2·5	-0·1	-3·1	-2·5	-1·3
Bombay	+0·4	+1·0	-0·1	-0·6	+0·1	-0·8	+0·6	-0·9	+0·8	+0·1	0	-0·7	0
Central India	-0·7	-1·5	+0·5	-1·9	-0·5	+1·9	-2·0	-1·8	-0·6	-1·3	-0·6	-1·5	-0·9
Central Provinces	-0·1	-2·5	-0·5	-2·0	-1·4	-2·7	-0·8	-1·9	+0·6	-1·4	+0·3	-0·7	-1·1
Hyderabad	-0·5	+1·0	+1·3	+0·7	-0·2	-2·3	+1·7	+1·9	+2·5	-1·1	+0·8	-0·3	+0·6
Mysore	-0·5	+1·3	+1·8	+0·2	+2·1	+0·4	-1·3	+1·0	-0·4	+1·1	+0·5	-1·1	+0·5
Madras	-0·7	+0·8	-0·2	+0·8	-0·3	-1·3	-0·4	+0·9	+0·1	+0·2	-0·7	-0·2	0

TABLE 12.—*Departure of the mean monthly and annual minimum temperature from the normal in the fifteen chief political divisions of India in 1919.*

Division.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma	°	°	°	°	°	°	°	°	°	°	°	°	°
Assam	+2·1	+0·7	+1·0	+0·3	+0·8	+0·3	-0·1	+0·2	-0·2	+0·7	+2·1	+1·3	+0·8
Bengal	+2·3	-0·5	+1·9	-0·4	+0·2	+1·4	-0·2	+1·0	-1·3	+0·6	+2·7	+1·4	+0·8
Bihar and Orissa	+2·7	-0·9	+0·7	-1·3	-0·1	+0·2	-0·3	+0·3	-0·7	+0·4	+1·5	-0·2	+0·2
United Provinces	+3·5	+0·2	+0·8	-0·6	-0·6	-0·4	-0·2	+0·3	-0·3	-0·2	+2·3	-0·1	+0·4
Punjab	-0·5	-1·1	+1·2	+0·1	-0·2	+2·3	-0·9	+0·4	-0·4	-0·8	-0·5	-0·4	+0·1
North-West Frontier Province	-0·1	+0·7	+0·1	+0·2	-0·3	+4·2	+2·9	+0·9	+0·9	-0·3	-2·1	+0·5	+0·6
Sind	-1·1	+0·8	+2·0	+0·7	+1·5	0	+0·9	+1·6	-0·8	-1·3	-0·9	-0·5	+0·2
Rajputana	-0·5	-1·0	+0·6	-0·9	-0·8	+0·7	-0·3	-0·7	-2·0	-1·1	+1·3	-0·8	-0·2
Bombay	-0·5	+0·4	0	-0·4	+0·8	+0·3	+0·1	+0·4	+0·4	+0·5	+3·8	+0·6	+0·7
Central India	-0·1	-0·1	+1·5	+0·1	+0·1	+0·5	-1·0	+0·1	-0·1	-0·7	+3·0	+0·1	+0·6
Central Provinces	-0·5	-1·3	+1·1	-1·1	-1·3	-1·1	-0·2	+0·1	-0·1	-0·1	+4·7	+0·1	+0·7
Hyderabad	-0·5	-0·1	+1·0	0	-0·3	-1·1	+0·5	+0·5	+0·5	+0·3	+5·1	+1·7	+1·3
Mysore	-0·5	-2·8	+0·5	+1·3	+0·7	+0·2	+0·5	+0·3	+1·1	+1·0	+2·1	+2·5	+1·4
Madras	-0·4	-2·7	-0·1	+1·2	+0·1	-0·1	0	+0·7	+0·5	+0·8	+1·7	+2·0	+1·1

TABLE 18.—*Departure of mean monthly and annual mean temperature from the normal in the fifteen chief political divisions of India in 1919.*

DIVISION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
	°	°	°	°	°	°	°	°	°	°	°	°	°
Burma . . . . . . . . . . . . . . . .	+1·4	+0·4	+1·2	+0·4	+1·5	+0·6	0	-0·2	0	+1·1	+1·4	+0·5	+0·7
Assam . . . . . . . . . . . . . . . .	+2·0	+0·7	+3·4	+0·5	+0·9	+1·4	-0·1	+2·1	-1·6	-0·4	+1·2	+0·9	+0·9
Bengal . . . . . . . . . . . . . . . .	+1·7	-0·7	+1·8	-0·8	+0·6	-0·1	-0·2	+0·3	-0·6	+0·6	+0·8	-0·2	+0·3
Bihar and Orissa . . . . . . . . . . . . . . . .	+1·7	-1·1	+1·2	-0·8	-0·6	-1·7	-0·5	-0·1	-0·8	-0·3	+0·9	-0·2	-0·1
United Provinces . . . . . . . . . . . . . . . .	+1·0	-1·2	+1·0	-1·1	-0·4	+2·2	-1·4	+0·4	-0·2	-0·6	-0·3	-0·7	-0·1
Punjab . . . . . . . . . . . . . . . .	+0·2	0	+0·6	-1·8	-2·0	+4·5	+0·2	-1·1	-0·4	+0·3	-1·8	-1·8	-0·3
North-West Frontier Province . . . . . . . . . . . . . . . .	-0·4	+0·9	+0·1	+0·4	-0·3	+6·9	+3·1	+0·2	+0·5	+0·3	-1·8	-2·7	+0·5
Sind . . . . . . . . . . . . . . . .	-1·1	+1·2	+0·9	-0·1	+0·4	0	+0·5	+0·8	-0·8	-0·6	-0·5	-1·3	-0·1
Rajputana . . . . . . . . . . . . . . . .	+0·4	-0·3	+0·1	-1·7	-1·1	+1·1	-1·1	-1·7	-2·2	-0·6	-0·9	-1·6	-0·8
Bombay . . . . . . . . . . . . . . . .	+1·2	+0·7	0	-0·4	+0·4	-0·2	+0·4	-0·2	+0·6	+0·3	+1·9	0	+0·4
Central India . . . . . . . . . . . . . . . .	+1·5	-0·8	+1·0	-0·9	-0·2	+0·7	-1·5	-0·9	-0·3	-1·0	+1·1	-0·7	-0·2
Central Provinces . . . . . . . . . . . . . . . .	+2·3	-0·6	+0·3	-1·6	-1·3	-1·9	-0·5	-0·9	+0·2	-0·7	+2·5	-0·3	-0·2
Hyderabad . . . . . . . . . . . . . . . .	+2·6	+2·4	+1·1	+0·3	-0·2	-1·7	+1·1	+1·2	+1·5	-0·4	+2·9	+0·7	+1·0
Mysore . . . . . . . . . . . . . . . .	+2·4	+2·2	+0·3	+1·7	+0·5	-0·6	+0·7	-0·1	+1·1	+0·7	+0·6	+1·3	+0·9
Madras . . . . . . . . . . . . . . . .	+2·1	+1·8	-0·1	+1·0	-0·1	-0·7	-0·2	+0·8	+0·3	+0·6	+0·6	+0·9	+0·6
Mean of India . . . . . . . . . . . . . . . .	+1·3	+0·2	+0·8	-0·5	-0·2	+0·4	-0·2	-0·1	-0·2	0	+0·7	-0·3	+0·8

TABLE 14.—Departure of the mean monthly and annual maximum temperature from the normal in 33 sub-divisions of India in 1919.

Sub-division.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
1. Bay Islands . . . . .	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦
2. Lower Burma . . . . .	-0·1	-1·1	-1·4	+0·1	+1·0	-1·1	-0·4	-0·1	+0·9	+0·8	-0·5	-0·3	-0·2
3. Upper Burma . . . . .	+1·2	+0·5	+1·1	+0·7	+1·5	+0·2	+0·4	-0·2	+1·5	+1·7	+0·6	+0·2	-0·3
4. Assam . . . . .	+0·1	-0·1	+1·9	+0·3	+2·7	+1·8	-0·4	-0·9	-1·4	+1·6	+0·7	-1·0	+0·4
5. Bengal . . . . .	+1·6	+1·9	+4·9	+1·5	+1·7	+1·5	0	+3·1	-1·9	-1·4	-0·3	+0·4	+1·1
6. Orissa . . . . .	+0·7	-0·6	+2·9	-0·3	+1·8	-0·5	-0·1	+0·4	-0·5	+0·9	+0·1	-0·2	+0·3
7. Chota Nagpur . . . . .	+0·3	-3·3	+1·2	0	-0·9	-3·6	+0·2	-1·2	+0·1	-0·2	-1·6	-0·4	-0·8
8. Bihar . . . . .	-1·3	-3·3	+1·7	-1·1	-2·4	-4·2	-1·5	-1·2	-0·2	0	-0·2	-0·3	-1·2
9. United Provinces, East . . . . .	+0·1	-1·3	+1·7	-1·6	+0·5	-1·9	-1·3	+0·6	-0·7	-0·5	+0·5	-0·1	-0·3
10. Do., do., West . . . . .	0	-1·7	+1·1	-2·0	+0·1	+1·2	-2·1	+1·2	-0·1	-0·8	+0·2	-0·5	-0·3
11. Punjab, East and North . . . . .	-0·2	-1·1	+0·2	-2·6	-1·2	+3·4	-1·7	-0·5	+0·1	0	-0·9	-2·0	-0·5
12. Do., Southwest . . . . .	-0·7	-1·1	-0·3	-3·2	-2·6	+4·5	-0·5	-1·6	+0·1	+0·6	-1·6	-4·3	-0·9
13. Kashmir . . . . .	-1·9	-5·1	-4·3	+0·3	+0·7	+3·7	+2·4	-1·5	-3·5	+0·4	+1·7	-1·1	-0·7
14. North-West Frontier Province . . . . .	-0·3	+0·9	+0·1	+0·5	-0·2	+7·7	+3·4	-0·6	-0·1	+0·8	-1·5	-6·0	+0·4
15. Baluchistan . . . . .	-2·7	+2·5	+2·8	+2·7	+1·5	+4·9	+8·3	+1·6	+0·1	-1·8	+2·3	-1·9	+1·3
16. Sind . . . . .	-1·2	+1·7	-0·2	-0·9	-0·7	0	+0·2	-0·1	-0·8	+0·2	0	-2·0	-0·3
17. Rajputana, West . . . . .	-1·0	+1·9	-0·4	-2·2	-0·5	+2·5	-1·0	-1·1	-2·3	+0·5	-2·1	-1·4	-0·7
18. Do., East . . . . .	-1·3	-0·8	-0·2	-2·5	-1·9	+1·0	-1·9	-3·7	-2·6	-0·5	-3·4	-3·1	-1·7
19. Gujarat . . . . .	+0·3	+1·1	-0·5	-1·1	+0·1	-0·2	+0·1	-1·9	+0·4	+0·4	-0·2	-1·1	-0·2
20. Central India, West . . . . .	-0·5	+0·4	+1·3	-1·1	+0·5	-0·1	-1·3	-1·7	+0·3	+0·1	-0·3	-1·2	-0·3
21. Do. do., East . . . . .	-1·0	-3·3	-0·3	-2·6	-1·5	+2·0	-2·7	-1·9	-1·5	-2·7	-0·9	-1·7	-1·5
22. Berar . . . . .	+0·7	0	+1·0	-1·0	+0·4	-2·0	+0·7	-0·7	+1·9	-0·9	+1·7	0	+0·1
23. Central Provinces, West . . . . .	-0·9	-2·9	-0·7	-2·5	-1·5	-2·4	-1·7	-2·7	+0·2	-1·5	0	-0·9	-1·5
24. Do. do., East . . . . .	+0·8	-4·1	-1·3	-2·1	-2·3	-3·9	-0·5	-1·3	0	-1·7	0	-1·0	-1·5
25. Konkan . . . . .	0	-0·8	-0·3	-0·4	+0·8	0	+0·3	0	+1·5	+0·3	-0·5	-0·1	0
26. Bombay Deccan . . . . .	+0·9	+1·8	+0·5	+0·3	0	-2·1	+1·4	+0·1	+0·9	-0·4	+0·6	-0·5	+0·3
27. Hyderabad, N. rth . . . . .	+1·5	+1·5	+3·1	+0·1	+0·2	-1·9	+2·1	+0·7	+2·2	-0·8	+2·2	-0·2	+0·9
28. Do., South . . . . .	+0·7	+1·8	+0·8	+1·0	-0·4	-2·5	+1·5	+2·4	+2·6	-1·2	-0·1	-0·3	+0·5
29. Mysore . . . . .	+1·3	+1·8	+0·2	+2·1	+0·4	-1·3	+1·0	-0·4	+1·1	+0·5	-1·1	+0·1	+0·5
30. Malabar . . . . .	+0·5	+0·6	+0·3	+1·0	-0·1	-0·4	-0·6	-0·3	+0·6	+0·2	-1·7	-0·3	0
31. Madras, Southeast . . . . .	+1·4	+1·3	-0·4	+0·8	-0·2	-0·9	-0·5	+1·0	-0·5	+0·9	-0·1	-0·2	+0·2
32. Do., Deccan . . . . .	+0·1	+0·5	-1·1	+0·6	-0·7	-2·4	+0·1	+1·9	+1·3	-0·7	-1·1	-0·1	-0·1
33. Do. Coast, North . . . . .	-0·4	+0·3	+0·1	+0·8	-0·6	-3·1	-0·4	+0·9	+0·8	-0·7	-0·9	-0·4	-0·3

TABLE 15.—*Departure of the mean monthly and annual minimum temperature from the normal in 33 sub-divisions of India in 1919.*

SUB-DIVISION.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
		°	°	°	°	°	°	°	°	°	°	°	°	°
1. Bay Islands . . . . . .		+2.3	+0.5	-0.9	+0.7	+0.9	+0.3	+1.0	+1.3	+1.5	+1.5	+0.3	+1.3	+0.9
2. Lower Burma . . . . . .		+1.9	+0.9	+0.7	+6.5	+1.0	0	0	+0.3	+0.1	+0.7	+1.0	+0.8	+0.7
3. Upper Burma . . . . . .		+2.5	+0.3	+1.4	+0.1	+0.6	+0.6	-0.2	+0.3	-0.6	+0.6	+3.5	+2.0	+0.9
4. Assam . . . . . .		+2.3	-0.5	+1.9	-0.4	+0.2	+1.4	-0.2	+1.0	-1.3	+0.6	+2.7	+1.4	+0.8
5. Bengal . . . . . .		+2.7	-0.9	+0.7	-1.3	-0.1	+0.2	-0.3	+0.3	-0.7	+0.4	+1.5	-0.2	+0.2
6. Orissa . . . . . .		+3.8	+2.0	0	+0.4	-0.7	-1.1	+0.2	-0.2	0	-0.1	+3.5	+0.3	+0.7
7. Chota Nagpur . . . . . .		+3.7	+0.2	+1.4	-1.4	-1.7	-0.5	-0.4	+0.3	-0.4	-0.8	+2.1	-0.3	+0.2
8. Bihar . . . . . .		+3.2	1.3	+1.1	-1.1	0	+0.1	-0.5	+0.7	-0.3	-0.3	+1.1	-0.2	+0.2
9. United Provinces, East . . . . . .		+2.1	-1.3	+1.2	+0.2	+0.5	+1.7	-0.9	+0.8	-0.3	-0.6	-0.3	-0.5	+0.2
10. Do. do., West . . . . . .		+1.9	-0.7	+1.2	-0.1	-1.0	+3.0	-1.0	-0.2	-0.4	-1.1	-0.7	-0.2	+0.1
11. Punjab, East and North . . . . . .		+1.2	0	+1.0	-0.8	-1.2	+5.5	+1.0	+0.1	-0.6	+0.3	-1.9	+0.5	+0.4
12. Do., South-west . . . . . .		+0.6	+1.5	+2.0	+0.1	-1.3	+3.7	+1.2	-0.7	-0.7	-0.9	-2.9	+0.2	+0.2
13. Kashmir . . . . . .		+0.3	-5.2	-1.6	+0.3	+0.7	+3.7	+3.2	+2.2	-1.5	-1.2	-3.0	0	-0.2
14. North-West Frontier Province . . . . . .		-0.5	+0.7	+0.1	+0.2	-0.8	+4.2	+2.9	+0.9	+0.9	-0.3	-2.1	+0.5	+0.6
15. Baluchistan . . . . . .		-3.1	-0.9	+0.3	+1.9	+2.3	+1.2	+1.9	+2.2	-0.7	-4.5	-2.7	-2.3	-0.4
16. Sind . . . . . .		-1.1	+0.8	+2.0	+0.7	+1.5	0	+0.9	+1.6	-0.8	-1.8	-0.9	-0.5	+0.2
17. Rajputana, West . . . . . .		+1.7	-0.6	0	+0.8	-0.9	+0.7	-0.7	-0.7	-2.7	-2.3	+1.6	-0.6	-0.8
18. Do., East . . . . . .		+2.8	-1.3	+0.8	-1.5	-0.8	+0.6	-0.2	-0.6	-1.5	-0.3	+1.2	-0.9	-0.2
19. Gujarat . . . . . .		+1.4	-0.7	+0.2	+0.1	+1.2	+0.3	+0.1	+0.1	+0.1	+0.4	+3.1	-0.2	+0.5
20. Central India, West . . . . . .		+3.3	+0.2	+1.5	+0.1	+0.5	-0.7	-0.3	+0.6	+0.3	-0.3	+4.9	+0.5	+0.9
21. Do. do., East . . . . . .		+4.1	-0.4	+1.4	+0.1	-0.3	+1.8	-1.7	-0.4	-0.6	-1.1	+1.1	-0.3	+0.8
22. Berar . . . . . .		+4.8	+2.0	+1.7	-0.7	+0.8	-0.5	+0.9	+0.9	+0.6	+0.7	+5.7	-0.2	+1.4
23. Central Provinces, West . . . . . .		+4.2	+0.7	+1.0	-1.1	-1.6	-1.0	-0.7	-0.2	-0.3	-0.2	+4.5	+0.2	+0.5
24. Do. do., East . . . . . .		+4.9	+1.6	+0.5	-1.7	-2.6	-1.8	-0.4	-0.3	-0.3	-0.3	+4.1	+0.2	+0.2
25. Konkan . . . . . .		+1.4	+0.4	-1.1	-1.0	+0.4	+0.8	+0.1	+0.5	+1.0	+1.2	+3.1	+1.4	+0.6
26. Bombay Deccan . . . . . .		+2.9	+1.7	+0.1	-0.7	+0.3	+0.2	+0.1	+0.9	+0.4	+0.3	+5.3	+1.1	+1.0
27. Hyderabad, North . . . . . .		+5.0	+8.3	+2.7	-0.8	+0.5	-0.8	+0.9	+1.0	+0.7	+0.1	+6.5	+3.1	+1.9
28. Do., South . . . . . .		+3.7	+3.5	+0.5	+0.5	-0.7	-1.3	+0.8	+0.8	+0.5	+0.4	+4.1	+1.2	+1.1
29. Mysore . . . . . .		+3.6	+2.8	+0.5	+1.3	+0.7	+0.2	+0.5	+0.8	+1.1	+1.0	+2.1	+2.5	+1.4
30. Malabar . . . . . .		+2.9	+1.7	+0.2	+1.2	-0.2	+0.4	-0.2	-0.2	+0.6	+0.7	+0.8	+1.7	+0.8
31. Madras, Southeast . . . . . .		+3.5	+2.6	0	+1.7	+0.7	+0.5	+0.2	+1.0	+0.4	+1.1	+1.3	+2.8	+1.3
32. Do. Deccan . . . . . .		+3.8	+3.9	-0.1	+1.5	-0.8	-0.2	+0.1	+1.4	+0.7	+1.1	+4.1	+2.5	+1.6
33. Do. Coast, North . . . . . .		+3.7	+3.1	+0.2	+0.1	-0.8	-1.5	-0.2	+0.6	+0.6	+0.4	+2.8	+1.5	+0.9

TABLE 16.—*Departure of the mean monthly and annual mean temperature from the normal in 33 sub-divisions of India in 1919.*

SUB-DIVISION.	January.	February.	March.	April.	May.	June.	July.	Aug. stat.	September.	October.	November.	December.	Year.
	°	°	°	°	°	°	°	°	°	°	°	°	°
1. Bay Islands	+	-	-	-	-	-	-	-	-	-	-	-	-
2. Lower Burma	+	+0.5	+0.7	+0.9	+0.6	+1.3	+0.1	+0.2	0	+0.3	+1.2	+0.8	+0.5
3. Upper Burma	+	+1.3	+0.1	+1.7	+0.2	+1.7	+1.2	-0.3	-0.3	-1.0	+1.1	+2.1	+0.5
4. Assam	+	+1.9	+0.7	+3.4	+0.5	+0.9	+1.5	-0.1	+2.1	-1.6	-0.4	+1.2	+0.9
5. Bengal	+	+1.7	-0.7	+1.8	-0.8	+0.6	-0.1	-0.2	+0.3	-0.6	+0.7	+0.8	-0.2
6. Orissa	+	+2.1	-0.7	+0.6	+0.2	-0.1	-2.3	+0.2	-0.7	+0.1	-0.1	+0.9	-0.1
7. Chota Nagpur	+	+1.2	-1.5	+1.5	-1.3	-2.1	-2.3	-0.9	-0.5	-0.3	-0.1	+0.9	-0.3
8. Bihar	+	+1.7	-1.3	+1.4	-1.3	+0.3	-0.9	-0.9	+0.7	-0.5	-0.4	+0.8	-0.1
9. United Provinces, East	+	+1.1	-1.5	+1.1	-0.9	+0.3	+1.5	-1.5	+1.0	-0.2	-0.7	-0.1	-0.5
10. United Provinces, West	+	+0.9	-0.9	+0.7	-1.3	-1.1	+3.2	-1.3	-0.3	-0.1	-0.5	-0.8	-1.1
11. Panjab, East and North	+	+0.3	-0.5	+0.3	-2.0	-1.9	+5.0	+0.3	-0.7	-0.3	+0.5	-1.7	-1.9
12. Punjab, Southwest	-0.1	+1.5	+1.1	-1.3	-2.3	+3.2	+0.2	-2.1	-0.9	-0.3	-2.1	-1.6	-0.4
13. Kashmir	-0.8	-5.1	-2.9	+0.3	+0.7	+3.7	+2.8	+0.3	-2.5	-0.4	-0.7	-0.5	-0.4
14. North-West Frontier Province	-0.4	+0.8	+0.1	+0.3	-0.3	+5.9	+3.1	+0.1	+0.4	+0.3	-1.8	-2.7	+0.5
15. Baluchistan	-2.9	+0.8	+1.5	+2.3	+1.9	+3.1	+2.6	+1.9	-0.3	-3.1	-0.2	-2.1	+0.5
16. Sind	-1.1	+1.3	+0.9	-0.1	+0.4	0	+0.5	+0.7	-0.8	-0.5	-0.5	-1.3	0
17. Rajputana, West	+	+0.3	+0.7	-0.2	-0.7	-0.7	+1.6	-1.3	-0.9	-2.5	-0.9	-0.3	-1.0
18. Rajputana, East	+	+0.5	-1.1	+0.3	-2.0	-1.3	+0.8	-1.1	-2.1	-2.1	-0.4	-1.1	-2.0
19. Gujarat	+	+0.9	+0.2	-0.1	-0.5	+0.7	+0.1	+0.1	-0.9	+0.8	+0.4	+1.5	-0.7
20. Central India, West	+	+1.4	+0.8	+1.4	-0.5	+0.5	-0.4	-0.8	-0.5	+0.8	-0.1	+2.3	-0.3
21. Central India, East	+	+1.5	-1.9	+0.5	-1.3	-0.9	+1.9	-2.2	-1.1	-1.1	-1.9	+0.1	-1.0
22. Berar	+	+2.7	+1.0	+1.3	-0.9	+0.6	-1.3	+0.8	+0.1	+1.2	-0.1	+3.7	-0.1
23. Central Provinces, West	+	+1.7	-1.1	+0.1	-1.8	-1.5	-1.7	-1.2	-1.5	-0.1	-0.9	+2.3	-0.3
24. Central Provinces, East	+	+2.9	-1.3	-0.4	-1.9	-2.7	-2.9	-0.5	-0.8	-0.1	-1.0	+2.1	-0.4
25. Konkan	+	+0.7	-0.2	-0.7	-0.7	+0.3	+0.1	+0.2	+0.3	+1.3	+0.7	+1.3	+0.3
26. Bombay Deccan	+	+1.9	+1.7	+0.3	-0.2	+0.1	-0.9	+0.7	+0.5	+0.7	-0.1	+2.9	+0.3
27. Hyderabad, North	+	+3.3	+2.4	+2.9	-0.3	+0.3	-1.3	+1.5	+0.9	+1.5	-0.3	+4.3	+1.5
28. Hyderabad, South	+	+2.2	+2.4	+0.7	+0.7	-0.5	-1.9	+0.9	+1.3	+1.5	-0.4	+2.0	+0.5
29. Mysore	+	+2.5	+2.3	+0.3	+1.7	+0.5	-0.5	+0.7	-0.1	+1.1	+0.7	+0.6	+1.3
30. Malabar	+	+1.7	+1.1	+0.3	+1.1	-0.1	0	-0.4	-0.3	+0.6	+0.5	-0.7	+0.4
31. Madras, Southeast	+	+2.6	+1.9	-0.2	+1.3	+0.3	-0.2	-0.1	+1.0	-0.1	+1.0	+0.5	+1.1
32. Madras Deccan	+	+1.9	+2.2	-0.6	+1.1	-0.5	-1.3	+0.1	+1.7	+1.0	+0.2	+1.5	+1.2
33. Madras Coast, North	+	+1.7	+1.7	+0.1	+0.6	-0.5	-1.8	-0.3	+0.7	+0.5	-0.1	+0.7	+0.5

## Atmospheric pressure.

Full information regarding the types of barometers in use at Indian observatories and of the methods of reducing the observations and obtaining the mean daily and monthly pressures will be found on pages 5 and 6 of the Monthly Review for January 1919.

In Table A, called Table II prior to 1907, of each Monthly Review, the monthly mean daily pressure (corrected for temperature) is given in the seventh column, and the departure from the normal in the eighth column. The normal monthly mean pressure values were recalculated in 1904 for all first and second class stations, and will be found in pages 66-69 of the "Indian Meteorological Memoirs," Volume XVII. The departure data in the Monthly Reviews for the year 1919 were obtained by a comparison of the actual monthly means with these normals; the departures of the monthly pressure of all first and second class stations in 1919 are given in Table 17. The figures in the seventh and eighth columns of Table A, appended to the present Annual Summary, giving data of the mean pressure of the air and its departure from the normal for all first and second class stations are comparable with the corresponding data of

previous years published in the Annual Reports and Annual Summaries.

In the ninth column of Table A in each Monthly Review are given the mean pressures reduced to sea-level and corrected to constant gravity (Lat.  $45^{\circ}$ ). These are not directly comparable with the sea-level pressure values of the years 1875-90 as given in the Annual Reports for those years, for previous to 1891 no correction was made to reduce the monthly pressure means to standard gravity.

In Table B of each monthly Review, and also in that appended to the Annual Summary, are given the pressure data for 8 hours local time. The fourth column in that table gives the mean 8 hours pressures for the month corrected for temperature. In the fifth column are given the departures of these mean 8 hours pressures from the normal pressures.

The greater part of the normal 8 hours monthly means of pressure used in Table B have been deduced from the barometric observations of the whole of the twenty-two years' period 1889-1910, and in all except 24 cases the periods employed equalled or exceeded five years.

TABLE 17.—Departure from normal of monthly and annual mean pressure of first and second class stations in 1919.

DIVISION.	STATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Bengal . . .	Calcutta . . .	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "
Punjab . . .	Lahore . . .	+·035	+·046	+·030	+·021	+·032	-·030	+·022	-·061	+·041	+·008	-·04	-·013	+·007
Rajputana . . .	Jaipur . . .	+·028	+·022	+·043	+·031	+·040	-·081	-·004	-·061	+·008	+·002	-·027	-·007	+·005
Bombay . . .	Bombay . . .	+·005	+·012	+·044	+·017	+·0·8	+·006	-·012	-·003	-·001	+·001	-·082	-·025	-·001
Mysore . . .	Bangalore . . .	+·025	+·033	+·049	+·029	+·028	-·005	+·002	+·030	+·013	+·023	-·033	-·006	+·016
Madras . . .	Madras . . .	+·002	+·017	+·037	+·004	+·014	-·034	-·010	-·001	+·018	+·015	-·065	-·032	-·003
Kashmir . . .	Srinagar . . .	...	...	...	...	+·013	-·027	-·012	-·005	+·021	0	-·046	-·020	...
Hill Stations excluding Kashmir and Baluchistan.	Katmandu . . .	+·060	+·054	+·055	+·030	+·106	+·070	+·073	+·061	+·053	+·015	-·014	+·006	+·058
Extra India . . .	Seychelles . . .	+·037	+·022	+·050	+·004	-·019	+·006	-·032	+·030	-·010	+·033	-·002	-·003	+·010
	Mauritius . . .	+·015	-·015	-·048	+·080	0	+·006	+·088	-·006	-·089	+·006	-·083	-·083	-·007

TABLE 18.—*Departure of the mean monthly pressure from the normal in the fifteen chief political divisions of India in 1919.*

DIVISION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma . . . . .	"	"	"	"	"	"	"	"	"	"	"	"	"
	+·043	+·029	+·022	+·011	+·001	-·013	+·016	-·022	+·046	+·018	-·027	-·001	+·010
Assam . . . . .	+·051	+·037	+·023	+·030	+·024	-·019	+·026	-·029	+·040	+·007	-·034	-·009	+·012
Bengal . . . . .	+·045	+·044	+·033	+·029	+·030	-·027	+·026	-·043	+·042	+·014	-·032	-·004	+·013
Bihar and Orissa . . . . .	+·044	+·048	+·046	+·034	+·042	-·035	+·028	-·041	+·056	+·018	-·035	0	+·017
United Provinces . . . . .	+·045	+·053	+·049	+·040	+·041	-·027	+·022	-·025	+·035	+·014	-·023	+·004	+·019
Punjab . . . . .	+·035	+·037	+·046	+·036	+·045	-·062	+·015	+·004	+·023	+·016	-·020	+·002	+·015
North-West Frontier Province . . . . .	+·025	+·021	+·031	+·015	+·027	-·093	-·013	+·001	+·015	+·009	-·030	-·001	+·001
Sind . . . . .	+·036	+·028	+·039	+·019	+·016	-·023	-·002	-·006	+·022	+·019	-·033	0	+·010
Rajputana . . . . .	+·021	+·043	+·044	+·022	+·027	-·031	+·010	-·019	+·032	+·017	-·037	-·002	+·011
Bombay . . . . .	+·004	+·019	+·038	+·019	+·003	-·007	-·002	-·010	+·010	+·007	-·063	-·019	0
Central India . . . . .	+·012	+·037	+·037	+·020	+·025	-·035	+·015	-·039	+·041	+·012	-·043	-·015	+·006
Central Provinces . . . . .	+·013	+·030	+·038	+·024	+·024	-·037	+·020	-·030	+·053	+·006	-·057	-·018	+·005
Hyderabad . . . . .	+·019	+·030	+·043	+·024	+·021	-·026	+·011	+·003	+·036	+·013	-·053	-·009	+·009
Mysore . . . . .	+·018	+·029	+·045	+·016	+·006	-·009	-·003	+·019	+·007	+·016	-·047	-·018	+·007
Madras . . . . .	+·015	+·028	+·046	+·015	+·009	-·020	-·001	+·013	+·021	+·015	-·055	-·022	+·005
Mean of India . . . . .	+·028	+·035	+·039	+·024	+·022	-·028	+·013	-·017	+·034	+·014	-·040	-·008	+·010

## Storms.

Four storms occurred in the Bay of Bengal during the year and three in the Arabian Sea. The dates on which they occurred and their intensities are given below; other details about them have been given in the weather reviews of the respective months.

TABLE 19.

Serial No.	Bay of Bengal or the Arabian Sea.	Month.	Dates.	Greatest observed barometric depth.	Intensity.
1	Bay of Bengal	July-August.	28th July to 4th August.	0·4"	Moderate.
2	Ditto	September	23rd to 25th	1½"	Very severe.
3 (continued as No. 6.)	Ditto	October-November.	30th October to 2nd November.	...	Moderate.
4	Ditto	November	13th to 16th	0·34"	Slight.
5	Arabian Sea	May-June	30th May to 2nd June.	Nearly 2"	Very severe.
6 (continued from 3.)	Ditto	November	5th to 8th	1"	Severe.
7	Ditto	December	29th to 31st	1"	Slight.

Winds of force nine or more were recorded on ships in the Indian seas during the year 1919 on the dates and at the places given below.

TABLE 20.

Month and date.	Name of ship.	APPROXIMATE POSITION.		REMARKS.
		Latitude.	Longitude.	
1919.		°	°	
1st January	Clan Keith	16	41	
2nd "	Circassia	14	43	
3rd "	Clan Keith	13	43	
15th February	Lightning	East of Muscat.		
1st March	Varsora	27	54	
18th "	Clan Mackeller	13	43	
30th May	City of Shanghai	10	64	
31st "	Ditto	9	68	

Month and date.	Name of ship.	APPROXIMATE POSITION.		REMARKS.
		Latitude.	Longitude.	
1919.				
2nd June	Elysia	16	58	12 Force.
2nd "	Sicilia	17	60	12 do.
5th "	Kasado Maru	15	74	
10th—13th June	Kushin Maru	17 to 21	91 to 88	
11th June	Bangala	20	89	Strong gale increasing to hurricane force.
11th "	Yatshing	21	88	
12th "	Bharata	14	87	
12th "	Yatshing	19	90	12 Force.
13th "	Swazi	12	57	
19th "	Upada	17	90	
1st July	Koranna	18	71	
23rd "	City of Agra	12	57	
26th "	Karroo	11	53	
27th "	Rajput	19	70	
28th "	Gujarat	15	95	
29th "	Kowarra	13	56	
31st "	Mahanada	21	88	
1st August	City of Agra	18	87	
4th "	Nellore	16	60	
6th "	Arankola	19	90	
6th "	Bangala	20	90	
7th "	Bangala	21	88	
7th "	Urlana	21	88	
7th "	Asoran Maru	20	88	
9th "	Suram	10	90	
11th "	Arankola	16	94	
24th to 26th August.	Umtali	13—11	55—59	
5th November	Zayani	17	63	12 force.
7th "	Zayani	?	?	12 "
14th December	Ismaila	North	Bay	
20th "	Maur	7	79	11 "
29th "	Mahronda	10	84	
30th "	Mahronda	12	85	

**Surface and upper air winds.**

The monthly data of surface and upper air winds are given in the Monthly Weather Reviews.

**Humidity.**

The departures from normal of the mean monthly and annual aqueous vapour pressure and relative humidity for stations in Table A, for the year 1919, are given in Tables 21 and 22. The Tables 23 and 24 give departure data of

8 hours aqueous vapour pressure and relative humidity for each month of the year and for the year for the fifteen chief political divisions.

TABLE 21.—*Departure of the monthly and annual mean vapour pressure data of 1919 from average of past years.*

DIVISION.	STATION.	JANUARY.	FEBRUARY.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	YEAR.
Bengal . . . .	Calcutta . . . .	" +·061	-·015	-·062	-·040	0	-·001	-·012	+·003	-·021	-·008	+·043	-·003	-·005
Punjab . . . .	Lahore . . . .	" +·022	+·024	+·017	+·054	+·046	+·084	+·040	+·091	+·013	-·019	+·001	+·018	+·033
Rajputana . . . .	Jaipur . . . .	-·009	-·088	-·057	-·034	-·039	-·040	-·013	+·048	-·018	-·045	-·019	-·012	-·023
Bombay . . . .	Bombay . . . .	-·015	-·032	-·027	-·044	-·019	-·022	-·026	-·027	-·013	-·036	+·027	-·048	-·023
Mysore . . . .	Bangalore . . . .	" +·077	+·012	-·059	-·059	+·006	-·002	+·012	-·007	+·028	+·016	+·052	+·058	+·011
Madras . . . .	Madras . . . .	" +·084	+·050	-·020	+·005	-·044	-·067	+·024	-·045	+·049	+·032	+·069	+·037	+·015
Kashmir . . . .	Srinagar . . . .	" ...	...	...	-·027	-·037	-·011	-·038	+·011	-·087	-·037	-·052	-·006	...
Hill Stations, excluding Kashmir and Baluchistan.	Katmandu . . . .	-·026	+·006	-·041	-·032	-·055	+·017	-·009	+·020	-·017	+·007	+·001	-·006	-·011
Extra India . . . .	Seychelles . . . .	" +·016	-·001	+·007	+·016	0	+·039	+·026	-·009	+·007	-·022	-·043	-·025	+·001
	Mauritius . . . .	" +·003	+·003	+·015	-·015	-·024	+·036	-·021	+·015	+·024	-·012	+·018	+·009	+·004

TABLE 22.—*Departure of the monthly and annual mean relative humidity data of 1919 from the average of past years.*

DIVISION.	STATION.	JANUARY.	FEBRUARY.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	YEAR.
Bengal . . . .	Calcutta . . . .	+ 2	- 3	- 9	- 3	- 1	+ 3	0	+ 1	- 2	- 5	+ 2	- 2	- 1
Punjab . . . .	Lahore . . . .	+ 1	+ 6	+ 1	+ 7	+ 5	- 4	0	+ 8	+ 1	- 1	+ 3	+ 8	+ 3
Rajputana . . . .	Jaipur . . . .	- 3	- 4	- 7	- 1	- 2	- 9	- 4	+ 6	- 1	- 6	- 1	+ 2	- 3
Bombay . . . .	Bombay . . . .	- 2	0	+ 1	- 2	- 2	- 2	- 3	- 2	- 4	- 6	- 1	- 7	- 3
Mysore . . . .	Bangalore . . . .	+ 5	0	- 5	- 7	+ 3	+ 2	+ 1	- 1	+ 1	- 1	+ 6	+ 4	+ 1
Madras . . . .	Madras . . . .	+ 1	- 1	- 1	- 3	- 5	- 6	+ 3	- 10	+ 3	- 1	+ 2	- 1	- 2
Kashmir . . . .	Srinagar . . . .	" ...	...	...	- 8	- 9	- 16	- 15	- 6	- 12	- 15	- 16	+ 3	...
Hill Stations, excluding Kashmir and Baluchistan.	Katmandu . . . .	- 7	0	- 8	- 2	- 8	0	- 4	- 2	- 1	- 2	- 3	- 2	- 3
Extra India . . . .	Seychelles . . . .	- 4	- 3	- 3	- 3	- 3	- 2	- 1	- 2	- 2	- 6	- 8	- 7	- 4
	Mauritius . . . .	- 2	- 4	- 2	- 4	- 3	+ 1	- 2	+ 2	+ 2	0	0	- 2	- 1

TABLE 23.—*Departure of the mean monthly aqueous vapour pressure from the normal in the fifteen chief political divisions of India in 1919.*

DIVISION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma . . . . .	"	"	"	"	"	"	"	"	"	"	"	"	"
Burma . . . . .	+·024	-·004	-·005	-·025	-·014	-·005	-·015	+·006	-·023	+·008	+·036	+·014	0
Assam . . . . .	+·028	-·026	-·013	-·041	-·016	+·033	-·002	+·028	-·043	+·013	+·037	+·031	+·002
Bengal . . . . .	+·033	-·044	-·047	-·037	-·019	-·004	-·014	-·004	-·027	-·001	+·012	-·014	-·014
Bihar and Orissa . . . . .	+·061	+·031	-·027	-·014	-·026	+·018	-·002	+·008	-·011	-·004	+·043	-·002	+·005
United Provinces . . . . .	+·023	-·016	-·028	-·007	-·063	+·006	+·010	+·020	-·011	-·028	-·018	-·012	-·010
Punjab . . . . .	+·016	+·014	-·012	+·015	+·011	+·043	+·027	+·050	-·046	-·044	-·032	+·016	+·005
North-West Frontier Province . . . . .	-·007	+·014	+·006	-·003	+·027	+·091	+·012	+·037	-·025	-·057	-·035	+·019	+·007
Sind . . . . .	-·039	-·005	+·018	+·048	+·062	+·037	+·003	+·020	-·057	-·083	-·084	-·006	-·005
Rajputana . . . . .	+·016	-·015	-·014	+·022	-·036	-·026	-·011	+·023	-·034	-·049	-·010	+·007	-·011
Bombay . . . . .	+·016	-·006	-·011	-·039	+·014	-·002	0	+·006	+·005	-·008	+·091	+·013	+·007
Central India . . . . .	+·042	+·012	+·029	-·047	-·021	-·004	+·004	+·010	-·008	+·011	+·048	+·021	+·009
Central Provinces . . . . .	+·083	+·077	+·027	-·025	-·001	+·013	+·002	-·005	-·013	+·019	+·077	+·007	+·022
Hyderabad . . . . .	+·058	+·057	-·027	-·048	+·023	+·004	+·002	-·017	+·011	-·008	+·100	+·013	+·014
Mysore . . . . .	+·060	+·024	-·032	-·026	+·005	-·009	-·003	-·010	+·015	+·005	+·051	+·044	+·009
Madras . . . . .	+·076	+·050	-·018	+·003	+·002	0	+·016	-·022	+·029	+·015	+·062	+·046	+·023
Mean of India . . . . .	+·036	+·012	-·010	-·014	-·007	+·007	+·002	+·009	-·014	-·010	+·082	+·012	+·006

TABLE 24.—Departure of the mean monthly and annual relative humidity from the normal in the fifteen chief political divisions of India in 1919.

DIVISION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma . . . . .	0	-2	-3	-3	-4	-1	-1	+1	-2	-2	0	-1	-1
Assam . . . . .	-2	-6	-9	-5	-5	-2	0	-3	0	+1	+2	-1	-3
Bengal . . . . .	+1	-5	-8	-2	-3	0	-1	-1	0	-2	0	-2	-2
Bihar and Orissa . . . . .	+4	+8	-6	-1	-2	+4	+1	+1	0	0	+3	+1	+1
United Provinces . . . . .	0	0	-6	0	-5	-4	+4	0	-1	-4	-2	-1	-2
Punjab . . . . .	+2	+4	-4	+3	+3	-4	+2	+5	-4	-5	-1	+6	+1
North-West Frontier Province . . . . .	-3	+5	+5	+3	+8	+6	0	+5	+2	-2	+3	+8	+3
Sind . . . . .	-5	-4	+1	+6	+6	+4	0	-1	-4	-7	-7	+4	-1
Rajputana . . . . .	0	-2	+2	+5	-3	-2	+1	+5	+1	-4	+2	+6	+1
Bombay . . . . .	+1	0	+1	-2	+1	+2	0	+1	0	0	+7	+3	+1
Central India . . . . .	+5	+5	+1	-3	-2	-1	+5	+4	+1	+4	+7	+7	+3
Central Provinces . . . . .	+9	+11	+1	-1	+2	+5	+2	+1	-3	+4	+6	+3	+3
Hyderabad . . . . .	+4	+3	-4	-4	0	+4	0	-3	0	+1	+9	+1	+1
Mysore . . . . .	+3	+1	-4	-5	+1	+1	-1	-1	+1	-1	+8	+6	+1
Madras . . . . .	+8	+1	-1	-2	0	+1	+3	-2	+2	+1	+6	+3	+1
Mean of India . . . . .	+2	+1	-2	-1	-1	0	+1	+1	-1	-1	+3	+2	0

### Cloud.

Normal values of the mean monthly and annual amount of cloud at stations in Table A have been obtained from the whole of the available data up to the end of the year 1899 and given in Tables XXXV and XXXVI of the Indian Meteorological Memoirs, Volume XVII. These means are the arithmetical averages of the cloud amounts as registered at 10 and 16 hours, and hence represent the mean amount during the day period rather than of the whole 24 hours.

The normals used in Table B are in the case of the majority of stations based on the 8 hours records of the period 1889–1910, and are given in Volume XXII, Part III, of the Memoirs.

Departure data of this element of meteorological observation for first and second class stations for the year 1919 are given in Table 25. Table 26 gives the departures of the 8 hours cloud for the fifteen chief political divisions of India.

TABLE 25.—Departure of the monthly and annual mean cloud amount of 1919 from the average of past years.

Division.	STATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Bengal . . . . .	Calcutta . . . . .	+3·1	+0·3	0	+0·9	-0·6	-0·6	+0·5	-0·2	-1·2	-0·6	+1·3	+0·3	+0·3
Punjab . . . . .	Lahore . . . . .	+0·6	-1·2	-0·3	-0·5	-0·3	-2·9	-0·2	+0·7	-1·1	-0·5	-0·6	+1·1	-0·4
Rajputana . . . . .	Jaipur . . . . .	+1·0	-1·2	+0·6	+0·7	+0·7	-2·7	+0·4	+1·1	+0·2	-0·4	+0·4	+0·4	+0·1
Bombay . . . . .	Bombay . . . . .	+0·6	+0·1	-0·2	-0·4	+0·1	+0·2	-0·8	+0·5	-0·4	-0·4	+1·1	-0·4	0
Madras . . . . .	Madras . . . . .	+0·1	+0·4	-0·7	-0·9	-0·1	+1·2	-1·3	-0·3	-0·9	+0·3	+0·8	+1·2	0
Kashmir . . . . .	Srinagar . . . . .	...	...	...	+1·0	0	-0·9	0	+2·2	+0·4	-1·4	-2·0	+1·9	...
Hill stations, excluding Kashmir and Baluchistan	Katmandu . . . . .	+1·3	+0·7	+0·5	+0·7	-0·3	+0·7	+0·1	-1·0	-0·2	-0·7	+0·7	+0·3	+0·2
Extra India . . . . .	Seychelles . . . . .	-0·6	+0·2	-0·8	+0·2	+0·6	-1·9	+0·5	-1·2	+0·5	-1·3	-1·4	-0·5	-0·5
	Mauritius . . . . .	+0·1	0	+0·3	+1·2	+0·7	+1·6	+1·6	+0·7	+0·8	+1·6	+0·3	+0·3	+0·8

TABLE 26.—*Departure of the mean monthly and annual cloud amount from normal in the fifteen chief political divisions of India in 1919.*

DIVISION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma . . . . .	+1·7	+1·0	+0·4	+0·9	+0·3	+0·5	+0·2	+0·5	-0·1	-0·3	+1·5	+1·5	+0·7
Assam . . . . .	+0·9	-1·3	-1·4	-1·1	-1·1	-0·7	-0·3	-2·3	-0·1	+0·2	+2·0	+1·3	-0·3
Bengal . . . . .	+2·6	-0·1	-0·4	-0·2	-0·6	0	-0·2	-0·1	-0·1	-0·3	+1·0	-0·1	+0·1
Bihar and Orissa . . . . .	+2·9	+0·8	+0·4	+0·9	-0·1	+1·1	+0·4	+0·5	+0·1	+0·5	+1·8	+0·4	+0·8
United Provinces . . . . .	+1·8	-1·3	-0·1	+0·3	+0·4	-0·2	+0·8	-0·2	-0·5	+0·3	+0·3	+0·4	+0·2
Punjab . . . . .	+0·3	-1·3	0	+0·2	+0·2	-1·4	+0·6	+0·6	-0·4	-0·2	-0·3	+0·9	-0·1
North-West Frontier Province . . . . .	-1·1	-2·4	-2·1	-0·9	+0·1	-1·3	-0·1	+0·9	-0·7	-0·4	-1·8	+0·6	-0·8
Sind . . . . .	-0·7	-1·4	+0·1	-0·3	-0·3	-0·2	-0·6	+0·1	-0·8	-0·3	-0·7	-0·7	-0·5
Rajputana . . . . .	+0·6	-1·2	+0·3	-0·1	+0·3	-0·8	+0·3	+0·5	0	0	+0·6	+0·3	+0·1
Bombay . . . . .	+0·6	+0·1	0	0	+0·2	+0·8	0	+0·8	+0·3	+0·2	+1·5	+0·1	+0·4
Central India . . . . .	+2·4	-0·9	+0·3	+0·1	+0·1	0	+0·7	+0·2	-0·8	-0·4	+0·8	-0·2	+0·2
Central Provinces . . . . .	+2·4	+0·5	0	-0·2	+0·3	+1·2	+0·5	+0·8	-0·4	+0·6	+2·3	-0·2	+0·7
Hyderabad . . . . .	+1·4	+0·6	+0·5	+0·1	+0·5	+1·6	-0·5	-0·2	-0·2	+0·6	+2·4	+0·7	+0·6
Mysore . . . . .	0	+0·4	0	-0·3	+0·2	-0·1	-0·5	-1·1	-0·5	-0·9	+1·4	+1·0	0
Madras . . . . .	+0·6	+0·1	-0·5	-0·3	+0·1	+0·6	+0·1	-0·1	-0·3	0	+1·7	+1·2	+0·3
Mean of India . . . . .	+1·3	-0·2	0	+0·1	+0·1	+0·2	+0·2	+0·2	-0·2	+0·1	+1·2	+0·5	+0·3

### Snowfall.

(A).—*The cold weather of 1918-19 and the succeeding hot weather:*

- (a) In Persia the total precipitation of the period November to May was appreciably below normal except in the region around Meshed where it was about 20 per cent. in excess owing chiefly to frequent falls in May.
- (b) In Baluchistan the precipitation was in decided excess in December and May and in marked defect in November and from January to April.
- (c) During the period from November to March for which alone information is available the snowfall appears to have been much heavier than usual on the ranges around and to the north of Kabul.
- (d) In the North-West Frontier Province the snowfall was heavier than usual in parts of the Hazara hills during the greater part of the winter; in the Kagan valley the snow-line came down as low as 4,000 feet on the 23rd March. In north Waziristan the fall was apparently light, while in south Waziristan it was on the whole somewhat in excess. In Drosh the snowfall appears to have been fairly heavy from December to March, and very light in April. More snow was lying at the end of May on the hills adjacent to Parachinar than at the corresponding time in the previous year.

- (e) In Kashmir the snowfall was nearly normal in November, February and March, in large excess in December and January, and lighter than usual in April. In May there were merely a few light local falls. In Ladak and the regions to the north there was on the whole considerably less than the usual amount, and the traffic with Yarkand was in consequence open through nearly the whole season.
- (f) In Chamba there were very heavy falls in December, January and April, and the accumulations at the end of May were not only well above the average but covered a larger area than usual; all the high passes remained closed. In the Kulu hills the winter was unusually severe and prolonged, and snow fell heavily and down to very low levels. In the opinion of the Assistant Commissioner the snowfall was much heavier than had occurred for many years. Towards the end of May large snow drifts existed in shady places down to 10,000 feet, and above 12,000 feet there was an unbroken sheet of snow everywhere. On the ranges near Kilba the snowfall was very much above the average owing chiefly to excessive falls in January and February and perhaps also in May. The accumulations there at the end of May were twice or thrice the normal amount,

In the region around Poo there was a great deal of snow between November and the first week of February; no information is available for the subsequent period. Practically no information is available from the Murree hills.

- (g) The snowfall in Garhwal was exceptionally heavy with the result that the quantity lying there at the end of the period was materially greater than usual. In the Almora hills the fall was well above normal in January and April and slightly above in May, while it was normal or in defect in the rest of the season. The accumulations on May 23rd were on the whole of about the average depth on the higher passes and somewhat in excess on the middle heights.
- (h) Snowfall was on the whole lighter than usual in the Balipara and Sadiya Frontier Tracts as well as on the ranges bordering on north Lakhimpur and the Kamrup districts.

On the whole it may be said that over nearly the whole area from Hazara to Garhwal the snowfall was unusually heavy and prolonged, and occurred to unusually low levels. The accumulations at the end of May were in consequence not only abnormally deep but also extended to much lower levels than usual. In the eastern Himalayas the snowfall appears to have been below normal.

(B).—*The south-west monsoon period, June to September:*

*June.*—Light falls occurred in the hills of the North-West Frontier Province, Kashmir and the Punjab, and fairly normal falls in the hills of the United Provinces.

*July.*—No snow was reported from the North-West Frontier Province hills, and there were only light falls in Kashmir; in the Punjab and the United Provinces hills the fall was normal or above it.

*August.*—Very little snow was reported from Kashmir and a roughly normal amount from the United Provinces hills.

*September.*—Some light falls occurred in the North-West Frontier Province hills and Kashmir, and the amounts in the United Provinces hills were roughly normal.

(C).—*The period October to December:*

*October.*—Only light snow fell in the hills of the North-West Frontier Province and Kashmir, and the amounts in the United Provinces hills were probably also below the average.

*November.*—The month's fall was in defect over the western and central Himalayas.

*December.*—The month's fall was on the whole in excess in the hills of the North-West Frontier Province as well as over the western and central Himalayas.

### Rainfall.

The information includes monthly statements of—

- (a) the actual rainfall, day by day, of all the rainfall stations;
- (b) the total rainfall of the month;
- (c) the number of rainy days during the month;
- (d) the average or normal rainfall of the month of all stations for which rainfall data of at least five years are available;
- (e) the average or normal number of rainy days of the month for all stations for which rainfall data of five years or upwards are available.

Symon's rain-gauges are now used at all rain-gauge stations with the exception of those in Mysore. The time of measuring rainfall is 8 hours by local time throughout India, and the amounts registered give the rainfall of the previous 24 hours, and hence generally of the previous civil day.

The tables 27 to 29 give summaries of the rainfall data of the year. The first and second tables give average rainfall data based on the returns of about 2,400 rain-gauge stations for the 15 chief political divisions and the 33 sub-divisions, respectively, while the third table (Table 29) contains data of the number of rainy days for the 33 sub-divisions for the four seasons into which the year has been divided.

The normals employed in this section are based on all the available records ending in 1910 and are given in Parts I and II of Volume XXII of the Memoirs of the Indian Meteorological Department.

PROVINCE.	Number of stations.
Burma . . . . .	213
Aseam . . . . .	124
Bengal . . . . .	242
Bihar and Orissa . . . . .	307
United Provinces of Agra and Oudh . . . . .	274
Punjab . . . . .	192
Kashmir . . . . .	39
North-West Frontier Province . . . . .	35
Baluchistan . . . . .	85
Rajputana . . . . .	183
Bombay . . . . .	289
Central India . . . . .	126
Central Provinces . . . . .	187
Hyderabad . . . . .	19
Mysore . . . . .	77
Coorg . . . . .	10
Madras (including Pudukkottai, Travancore and Cochin) . . . . .	513
TOTAL . . . . .	915

TABLE 27.—Average over the 15 chief political divisions of the actual and normal rainfall for the four seasons of the year 1919 and for the whole year.

DIVISION.	JANUARY AND FEBRUARY.					MARCH TO MAY.					JUNE TO SEPTEMBER.					OCTOBER TO DECEMBER.					WHOLE YEAR.			
	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.
Burma	0'16	0'31	-0'15	-48	6'33	10'66	-4'23	-40	65'28	59'96	+5'33	+9	8'60	9'23	-0'57	-6	80'68	80'05	+0'63	0				
Assam	0'88	2'24	-1'36	-61	10'76	25'99	-9'15	-35	60'88	64'50	-4'12	-6	8'77	6'63	+3'14	+33	86'77	90'26	-13'49	-13				
Bengal	1'47	1'39	+0'08	+6	9'27	13'52	-4'25	-31	58'31	54'73	+3'58	+7	5'19	5'62	-0'43	-8	74'24	75'26	-1'03	-1				
Bihar and Orissa	3'49	1'50	+1'99	+133	3'53	4'06	-0'53	-13	47'21	42'20	+5'01	+12	4'11	3'66	+0'46	+13	58'34	51'41	+6'93	+13				
United Provinces	2'96	1'69	+1'27	+86	1'03	1'41	-0'38	-27	34'58	38'45	+1'13	+3	1'66	1'84	-0'18	-10	40'23	38'20	+1'04	+6				
Punjab	2'99	2'04	+0'95	+47	1'51	1'92	-0'41	-21	15'96	15'03	+0'94	+2	1'33	0'77	+0'56	+73	21'18	19'76	+1'43	+7				
North-West Frontier Province	2'82	2'82	0	0	4'22	4'46	-0'26	-6	8'57	8'34	+0'33	+3	2'80	1'31	+1'50	+126	18'61	18'96	+1'46	+9				
Sind	0'11	0'57	-0'46	-81	0'53	0'50	+0'03	+6	6'29	5'33	+0'97	+18	0'22	0'1	+0'04	+33	7'16	6'57	+0'58	+9				
Rajputana	1'00	0'65	+0'35	+54	0'72	0'80	-0'08	-10	23'61	18'38	+5'23	+29	0'90	0'68	+0'12	+18	26'18	30'66	+5'67	+38				
Bombay	0'15	0'17	-0'02	-12	1'32	1'46	-0'13	-9	42'01	40'56	+1'45	+4	4'00	3'24	+0'76	+23	47'46	45'42	+3'06	+6				
Central India	2'13	0'79	+1'34	+170	0'79	0'78	+0'01	+1	46'76	31'47	+15'20	+49	1'93	1'38	+0'56	+40	51'61	34'42	+17'19	+60				
Central Provinces	4'71	1'03	+3'68	+344	1'86	1'56	+0'30	+19	47'51	39'67	+7'84	+20	4'60	2'51	+3'00	+83	58'68	44'80	+18'88	+81				
Hyderabad	0'78	0'36	+0'42	+117	2'00	1'70	+0'21	+12	23'02	26'71	-3'69	-14	0'39	3'89	+3'71	+74	33'19	32'54	-0'35	-1				
Mysore	0'23	0'23	0	0	5'40	5'38	+0'11	+2	24'74	23'64	+2'90	+10	8'67	8'06	+0'68	+8	39'12	36'08	+3'06	+8				
Madras	1'48	0'98	+0'45	+46	5'95	5'48	+0'52	+10	20'17	27'75	+1'58	+5	19'73	15'38	+4'35	+28	56'29	49'54	+6'76	+14				
Mean of India	1'77	1'00	+0'77	+77	3'58	4'84	-1'00	-23	38'24	34'06	+3'26	+9	5'60	4'63	+0'97	+21	49'19	45'25	+3'96	+9				

TABLE 28.—Average over the 33 sub-divisions of the actual and normal rainfall for the four seasons of the year 1919, and for the whole year.

Sub-division.	JANUARY AND FEBRUARY.				MARCH TO MAY.				JUNE TO SEPTEMBER.				OCTOBER TO DECEMBER.				WHOLE YEAR.			
	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.	Actual.	Normal.	Departure from normal.	Percentage departure from normal.
1. Bay Islands . . .	" 0'82	1'45	-0'63	-43	" 6'92	11'00	-4'08	-37	" 37'39	49'43	-12'04	-24	" 15'81	16'19	-0'38	-2	" 60'94	78'07	-17'13	-22
2. Lower Burma . . .	0'25	0'42	-0'17	-40	10'08	15'33	-5'25	-34	117'29	106'54	+10'75	+10	12'75	11'31	+1'44	+13	140'37	133'00	+ 6'77	+ 5
3. Upper Burma . . .	0'11	0'24	-0'13	-54	4'00	7'47	-3'47	-46	31'56	29'71	+ 1'85	+ 6	5'97	7'86	-1'89	-24	41'64	45'28	- 3'64	- 8
4. Assam . . .	0'88	2'24	-1'36	-61	16'74	26'80	-9'15	-35	60'38	64'50	- 4'12	- 6	8'77	6'63	+2'14	+32	86'77	99'26	-12'40	-13
5. Bengal . . .	1'47	1'39	+0'08	+ 6	9'27	13'53	-4'25	-31	59'31	54'73	+ 3'58	+ 7	5'19	5'62	-0'43	- 8	74'24	75'26	- 1'02	- 1
6. Orissa . . .	4'60	1'49	+3'20	+215	5'43	5'66	-0'24	- 4	49'16	44'53	+ 4'63	+10	7'65	5'77	+1'88	+33	66'92	57'45	+ 9'47	+16
7. Chota Nagpur . . .	4'98	2'02	+2'96	+147	4'14	3'69	+0'55	+15	51'90	41'85	+10'05	+21	1'28	3'17	+1'06	+33	65'25	50'63	+14'62	+29
8. Bihar . . .	2'17	1'24	+0'93	+75	2'38	3'55	-1'10	-34	44'16	41'29	+ 2'87	+ 7	2'53	2'88	-0'35	-12	51'22	48'96	+ 2'26	+ 5
9. United Provinces, East .	2'13	1'21	+0'92	+76	0'80	1'22	-0'42	-34	35'69	34'42	+ 1'27	+ 4	2'31	2'38	-0'07	- 3	40'93	39'23	+ 1'70	+ 4
10. Do. do., West .	3'67	1'91	+1'76	+92	1'23	1'57	-0'34	-22	33'62	32'64	+ 0'98	+ 3	1'09	1'37	-0'28	-20	39'61	37'49	+ 2'12	+ 6
11. Punjab, East and North .	3'53	2'34	+1'19	+51	1'41	2'05	-0'64	-31	18'58	17'81	+ 0'77	+ 4	1'45	0'88	+0'57	+65	24'97	23'08	+ 1'99	+ 8
12. Do., Southwest .	1'38	1'10	+0'28	+25	1'85	1'50	+0'35	+23	5'91	6'59	- 0'68	-10	0'97	0'41	+0'56	+137	10'11	9'60	+ 0'51	+ 5
13. Kashmir . . .	9'54	7'85	+1'69	+23	8'06	9'54	-1'48	-16	23'04	21'02	+ 2'02	+10	4'28	3'46	+0'80	+23	44'90	41'87	+ 3'03	+ 7
14. North-West Frontier Province.	2'89	2'82	0	0	4'22	4'48	-0'26	- 6	8'57	8'34	+ 0'23	+ 3	2'80	1'31	+1'40	+114	18'41	16'95	+ 1'46	+ 9
15. Baluchistan . . .	1'46	2'95	-1'49	-51	1'79	2'39	-0'53	-23	2'43	2'32	+ 0'11	+ 5	0'73	1'31	-0'58	-44	6'41	8'90	- 2'49	-28
16. Sind . . .	0'11	0'57	-0'46	-81	0'53	0'50	+0'03	+ 6	6'29	5'32	+ 0'97	+18	0'22	0'18	+0'04	+22	7'15	6'57	+ 0'58	+ 9
17. Rajputana, West .	0'63	0'50	+0'13	+26	0'53	0'67	-0'15	-22	11'51	10'25	+ 1'26	+12	0'31	0'37	-0'06	-16	12'97	11'79	+ 1'18	+10
18. Do., East .	1'18	0'71	+0'47	+68	0'81	0'86	-0'05	- 6	28'82	21'86	+ 6'96	+32	1'06	0'85	+0'21	+25	31'87	24'28	+ 7'50	+81
19. Gujarat . . .	0'23	0'16	+0'07	+44	0'11	0'28	-0'17	-61	31'86	31'08	+ 0'78	+ 3	2'02	0'90	+1'12	+124	34'22	32'42	+ 1'80	+ 6
20. Central India, West .	1'60	0'60	+1'00	+167	0'76	0'68	+0'08	+12	44'64	29'50	+15'14	+51	1'76	1'22	+0'54	+44	48'76	32'00	+16'76	+52
21. Do. do., East .	3'34	1'21	+2'13	+176	0'85	1'01	-0'16	-16	50'12	34'68	+15'44	+45	2'17	1'61	+0'56	+35	58'48	38'51	+17'97	+47
22. Bihar . . .	2'07	0'84	+1'48	+223	0'90	1'02	-0'12	-13	24'65	27'75	- 3'10	-11	3'62	2'48	+1'14	+46	31'24	31'80	- 0'65	- 2
23. Central Provinces, West .	5'35	1'10	+4'25	+386	1'50	1'29	+0'21	+16	50'66	40'50	+10'16	+25	4'42	2'39	+2'03	+85	61'93	45'28	+16'65	+37
24. Do. do., East .	5'82	1'29	+4'53	+351	2'76	2'10	+0'66	+31	58'81	46'21	+12'60	+27	5'34	2'63	+2'71	+103	72'73	52'23	+20'50	+39
25. Kanhan . . .	0'09	0'13	-0'04	-81	0'81	1'74	-0'93	-53	101'49	102'21	- 0'73	- 1	7'21	4'93	+2'38	+46	109'60	109'01	+ 0'69	+ 1
26. Bombay Deccan . . .	0'14	0'19	-0'05	-26	2'28	2'08	+0'19	+ 9	27'15	24'53	+ 2'62	+11	4'11	4'13	-0'02	0	33'68	30'04	+ 2'74	+ 9
27. Hyderabad, North .	1'11	0'32	+0'79	+247	1'65	1'58	+0'13	+ 8	23'63	29'24	- 5'61	-19	3'98	3'43	+0'56	+16	30'38	34'52	- 4'14	-12
28. Do., South .	0'43	0'40	+0'03	+ 5	2'40	2'07	+0'33	+16	23'31	23'89	- 1'58	- 7	9'05	3'98	+5'09	+129	34'18	30'32	+ 3'86	+13
29. Mysore . . .	0'22	0'23	0	0	5'49	5'88	+0'11	+ 2	24'74	22'44	+ 2'30	+10	8'67	8'04	+0'63	+ 8	39'12	38'08	+ 3'04	+ 8
30. Malabar . . .	2'00	0'90	+1'01	+102	12'61	11'89	+0'72	+ 6	74'27	72'93	+ 1'34	+ 2	23'38	19'74	+3'64	+18	112'26	105'55	+ 6'71	+ 6
31. Madras, Southeast .	0'98	1'33	-0'45	-34	4'57	4'33	+0'24	+ 6	12'99	11'70	+ 1'29	+11	22'99	17'90	+5'09	+28	41'43	35'26	+ 6'17	+17
32. Do., Deccan . . .	0'49	0'22	+0'27	+123	2'98	2'42	+0'56	+23	18'71	15'11	+ 3'60	+24	6'55	6'62	-0'07	- 1	28'73	24'37	+ 4'36	+18
33. Do., Coast North .	2'36	0'66	+1'70	+358	4'28	3'43	+0'85	+25	25'79	25'21	+ 0'58	+ 2	18'37	10'91	+5'46	+60	48'80	40'21	+ 8'9	+21

TABLE 29.—Average over the 33 sub-divisions of the actual and normal number of rainy days for the four seasons of the year 1919, and for the whole year.

S. SITARAMAYYA,

### *Scientific Assistant.*

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**Table A.—Abstract of observations taken at 10 hrs. and 16 hrs.  
at 13 stations in India, etc., in the year 1919.**

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*Abstract of observations taken at 10 hrs. and 16 hrs.*

Number of sub-division.	STATION.	Height of barometric pressure above sea-level in feet.	PRESSURE.							TEMPERATURE OF AIR.								
			Mean of 10 hrs.	Mean of 16 hrs.	Mean daily range.	Mean of daily mean pressures.	Departure from normal.	Mean reduced to sea-level and to gravity at 45° Lat.	Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hrs.	Mean 16 hrs.	Mean of daily means.	Departure from normal.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
III.—Bengal.																		
5	Calcutta	21	29.854	29.738	-116	29.794	+0.000	29.763	87.5	71.2	16.3	104.6	40.4	55.2	81.6	84.7	78.8	+0
VI.—Punjab.																		
11	Lahore	702	29.129	29.037	-93	29.075	+0.004	29.048	86.3	63.7	24.6	117.6	36.1	82.4	78.6	87.9	74.8	+0
IX.—Rajputana.																		
18	Jaipur	1,431	28.461	28.349	-102	28.394	+0.017	28.761	89.1	65.7	23.4	112.6	38.6	74.0	81.4	86.9	78.2	-0
X.—Bombay.																		
26	Bombay	27	29.869	29.770	-99	29.857	0	29.804	88.6	74.6	10.6	94.0	81.1	83.9	80.7	82.8	79.9	+0
XIV.—Mysore.																		
29	Bangalore	3,021	26.960	26.858	-111	26.917	+0.018	29.748	85.3	65.6	19.8	98.3	51.2	47.1	77.1	62.3	74.0	+1
XV.—Madras.																		
31	Trivandrum	198	29.750	29.648	-103	29.704	+0.014	29.631	84.8	75.0	9.8	93.3	59.9	32.4	81.4	83.1	78.8	+0
	Pudukkottai	316	29.621	29.484	-137	29.552	...	29.706	83.9	75.3	18.6	105.8	82.2	40.6	85.3	80.6	84.6	...
	Madras	23	29.803	29.779	-113	29.840	-0.003	29.793	91.3	76.1	15.2	108.2	64.6	48.7	86.4	87.0	83.6	+0
Kashmir																		
13	Srinagar (a)	...	24.863	24.774	-99	24.818	...	24.793	73.1	46.2	24.9	93.8	16.3	77.5	63.1	70.5	60.6	-0
Hill stations, excluding Kashmir and Baluchistan.																		
	Katmandu	4,888	25.068	25.584	-074	25.618	+0.053	25.574	78.2	54.0	24.2	96.0	31.6	64.6	67.2	74.0	68.8	+0
	Kodaikanal	7,888	22.850	22.788	-062	22.819	...	22.754	65.6	51.1	14.6	78.7	42.4	39.3	61.9	50.0	58.2	-0
Extra India.																		
	Seychelles	15	29.992	29.903	-089	29.954	+0.010†	29.893	83.7	78.4	5.3	89.0	73.9	15.1	81.7	83.0	79.8	+1
	Mauritius	181	...	...	...	...	29.890	-0.007	29.948	81.4	67.6	18.6	94.8	56.4	39.4	...	78.0	+

N.B.—Elevation in italics indicate barometric determinations.

Note.—The barometric readings are not reduced to sea-level, in the case of hill or plateau stations, the elevations of which exceed 3,000 feet.

(a) Mean of 9 months.

† Departure from old normal.

13 stations in India, etc., in the year 1919.

TEMPERATURE, WET-BULB.			VAPOUR TENSION IN INCHES OF MERCURY.					HUMIDITY.					CLOUD.				RAINFALL.			STATION.		Number of sub-division.	
Mean 10 hrs.	Mean 16 hrs.	Mean of three previous columns.	From minimum.	Mean 10 hrs.	Mean 16 hrs.	Mean of daily means.	Departure from normal.	From minimum.	Mean 10 hrs.	Mean 16 hrs.	Mean of daily means.	Departure from normal.	Mean 10 hrs.	Mean 16 hrs.	Mean of two previous columns.	Departure from normal.	Total rainfall for the year.	Heaviest rainfall during the year.	40	41			
31	32	33	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39					
1 73·6	74·0	73·3	-708	-751	-713	-740	-0·04	89	69	60	76	-1	4·7	5·0	4·9	+0·3	63·46	7·29	Calcutta	• • • • •	5	III.—Bengal.	
2 66·6	66·4	64·9	-490	-531	-518	-523	+0·26	77	54	41	59	+3	2·4	2·4	2·4	-0·5	22·11	6·73	Lahore	• • • • •	11		
3 66·0	66·1	63·3	-463	-443	-409	-442	-0·23	67	41	33	50	-3	3·2	4·4	3·8	+0·1	26·90	3·66	Jaipur	• • • • •	13		
4 74·7	75·6	73·5	-675	-783	-793	-766	-0·24	75	74	70	76	-2	3·9	3·7	3·8	0	68·32	10·92	Bombay	• • • • •	25		
5 67·6	67·7	66·1	-551	-548	-511	-533	+0·11	88	63	40	69	+1	5·6	6·1	5·9	...	40·14	2·02	Bangalore	• • • • •	29		
6 75·7	76·6	...	-613	-830	...	...	...	76	74	...	...	...	7·3	7·5	7·4	+1·0	79·45	5·86	Trivandrum	• • • • •	31		
7 74·1	74·7	...	-604	-648	...	...	...	58	47	...	...	...	4·6	5·6	5·1	...	38·45	2·14	Pudukkottai				
8 77·1	77·7	76·1	-789	-805	-825	-623	+0·14	88	65	66	76	-1	5·1	5·1	5·1	+0·1	49·01	4·29	Madras.				
9 56·0	59·9	54·0	-327	-406	-428	-387	...	86	65	55	69	...	3·5	4·5	4·0	...	12·11	0·80	Srinagar.				
10																				Hill stations, excluding Kashmir and Baluchistan.		13	
11 60·1	62·5	59·1	-393	-464	-456	-438	-0·11	86	67	53	70	-3	4·5	5·1	4·8	+0·2	45·74	2·66	Katmandu.				
12 54·8	55·7	53·7	-296	-358	-600	-549	...	78	66	79	74	...	5·4	7·6	6·5	...	65·06	2·31	Kodaikanal.				
13 76·5	76·9	75·1	-696	-844	-840	-814	+0·03	71	78	76	77	-4	5·8	5·8	5·8	-0·4†	100·82	8·51	Seychelles.				
14	...	...	...	...	...	-833	+0·04	...	...	...	74	-1	...	...	...	+0·8	39·44	1·89	Mauritius.				

† Departure from old normal.

**Table B.—Abstract of observations taken at 8 hrs. at 214 stations in India, etc., in the year 1919.**

(1) Provincial means.

(2) Data of stations.

1) Provincial means based on the material in Table B (2) except that the statement of rainfall depends on the complete data of about 2,300 stations.

DIVISION.	TEMPERATURE OF AIR.										HYGROMETRY.			CLOUD.		RAINFALL.		
	Pressure departure from normal of year.	Mean maximum of year.	Departure from normal of year.	Mean minimum of year.	Departure from normal of year.	Yearly mean of mean between maximum and minimum.	Departure from normal of year.	Mean daily range of temperature.	Departure of velocity from normal.	Mean humidity of year.	Departure from normal of year.	Mean vapour tension of year.	Departure from normal of year.	Mean cloud amount of year.	Departure from normal of year.	Rainfall of year.	Normal rainfall of year.	Departure from normal of year.
Uttar Pradesh . . . . .	+·010	88·4	+0·6	71·4	+0·8	79·9	+0·7	17·1	+0·3	83	-1	·758	" 0	5·6	+0·7	80·43	80·05	+0·38
Gangetic Bengal . . . . .	+·012	84·9	+1·1	67·0	+0·8	75·9	+0·9	17·9	-0·4	87	-3	·700	+0·02	5·1	-0·3	86·77	99·26	-12·49
Bihar and Orissa . . . . .	+·013	86·7	+0·8	69·8	+0·2	78·3	+0·3	16·9	-0·4	82	-2	·741	-0·14	4·5	+0·1	74·24	75·26	-1·02
United Provinces of Agra and Oudh . . . . .	+·017	87·8	-0·7	68·7	+0·4	78·2	-0·1	19·1	-0·2	75	+1	·668	+0·05	4·3	+0·8	58·34	51·41	+6·93
Punjab . . . . .	+·015	89·0	-0·9	63·7	+0·4	75·9	-0·8	24·4	+0·3	63	+1	·499	+0·05	2·6	-0·1	40·23	38·29	+1·94
North-West Frontier Province . . . . .	+·001	88·0	+0·4	61·5	+0·6	74·7	+0·5	26·5	-0·7	66	+3	·485	+0·07	1·7	-0·8	18·41	18·95	+1·46
Gad . . . . .	+·010	90·7	-0·8	68·6	+0·2	79·7	-0·1	22·1	-1·7	73	-1	·576	-0·05	1·9	-0·5	7·15	6·57	+0·58
Sikhsitana . . . . .	+·011	90·1	-1·3	66·8	-0·2	78·4	-0·8	23·2	-0·2	56	+1	·475	-0·11	2·9	+0·1	26·18	20·46	+5·67
Madras . . . . .	0	89·6	0	69·5	+0·7	79·6	+0·4	20·1	-1·1	69	+1	·629	+0·07	3·9	+0·4	47·48	45·42	+2·06
Central India . . . . .	+·006	87·7	-0·9	65·5	+0·6	76·7	-0·2	22·2	-0·8	65	+3	·528	+0·09	3·6	+0·2	51·61	34·42	+17·19
Central Provinces . . . . .	+·005	88·8	-1·1	67·6	+0·7	78·2	-0·2	21·2	+0·2	65	+3	·550	+0·02	4·1	+0·7	58·68	44·80	+18·88
Deccan . . . . .	+·009	92·2	+0·6	70·7	+1·8	81·4	+1·0	21·5	0·4	64	+1	·591	+0·14	4·3	+0·3	32·19	32·54	-0·35
North . . . . .	+·007	85·7	+0·5	66·4	+1·4	76·1	+0·9	19·3	+0·3	76	+1	·599	+0·09	5·8	0	39·12	36·08	+3·04
Madras . . . . .	+·005	90·5	0	75·0	+1·1	89·8	+0·6	15·4	+0·2	77	+1	·786	+0·22	4·9	+0·3	56·28	49·54	+6·74

## ANNUAL SUMMARY, 1919.

TABLE

(2) Abstract of observations taken at 8 hrs. at 21

Number of sub-division.	STATION.	Height of barometer above sea-level in feet.	PRESSURE, 8 HRS., IN INCHES.						TEMPERATURE OF AIR.									
			Mean 8 hrs. pressure reduced to 32°.	Departure from normal of year.	Mean 8 hrs. pressure reduced to sea-level and due to constant gravity at 45° Lat.	Highest pressure of year.	Lowest pressure of year.	Mean of 8 hrs. dry bulb of year.	Mean maximum of year.	Departure from normal of year.	Mean minimum of year.	Departure from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
I.—Burma.																		
2	Victoria Point . . . . .	147	29.702	...	29.870	29.943	29.621	79.8	76.7	86.4	...	76.5	...	81.6	...	10.9	94.9	77.9
	Mergui . . . . .	68	29.880	+0.12	29.875	30.070	29.679	77.8	75.4	88.2	+0.7	78.8	+2.0	81.0	+1.3	14.4	97.0	61.1
	Tavoy . . . . .	19	29.916	-0.07	29.869	30.124	29.692	77.5	74.6	89.5	+1.7	72.6	+1.0	81.0	+1.3	16.9	99.8	57.9
	Moulmein . . . . .	94	29.860	+0.14	29.875	30.001	29.582	77.7	74.2	88.3	+0.2	73.3	+0.8	80.8	+0.6	15.0	98.0	61.1
	Rangoon . . . . .	18	29.900	+0.17	29.864	30.150	29.611	77.0	74.0	90.1	+0.8	73.3	+0.2	81.7	+0.6	16.9	103.2	41.1
	Bassein . . . . .	27	29.897	+0.16	29.880	30.146	29.565	78.1	75.0	90.0	+1.9	78.1	+0.6	81.6	+1.3	16.9	102.7	47.1
	Diamond Island . . . . .	41	29.880	-0.05	29.886	30.106	29.524	81.3	76.3	88.3	+1.0	77.1	+1.4	81.7	+1.2	9.2	92.8	69.1
	Toungoo . . . . .	184	29.755	+0.18	29.882	30.019	29.469	78.9	73.9	90.4	+0.3	70.9	+0.4	80.6	+0.3	19.6	100.1	51.1
	Kyaungpyu . . . . .	18	29.874	...	29.832	30.146	29.467	78.0	74.2	85.1	...	74.1	...	78.6	...	21.0	95.6	50.6
	Akyab . . . . .	20	29.887	0	29.820	30.145	29.444	78.0	73.1	86.0	+0.1	70.7	-1.4	78.6	-0.7	16.8	97.6	53.1
3	Minbu . . . . .	165	29.725	0	29.834	30.061	29.405	77.7	71.2	91.9	+0.3	72.6	+1.2	82.3	+0.7	19.2	108.1	59.1
	Yamethin . . . . .	644	29.282	+0.11	29.878	29.545	29.960	75.8	71.1	91.8	0	70.9	+1.3	81.1	+0.7	20.4	105.2	59.1
	Mandalay . . . . .	280	29.654	+0.20	29.854	29.989	29.349	79.0	71.5	94.8	+1.7	82.5	+1.2	83.4	+1.5	21.8	110.7	57.7
	Monywa . . . . .	280	29.627	+0.17	29.859	29.951	29.315	78.5	70.7	92.6	+1.3	79.3	+1.2	82.4	+1.3	20.1	108.6	59.1
	Lashio . . . . .	2,820	27.119	+0.10	27.065	27.402	26.847	68.4	68.4	80.8	-1.3	61.4	+1.1	71.1	-0.1	19.5	94.1	47.1
	Bhamo . . . . .	361	29.526	+0.26	29.840	29.673	29.313	70.7	68.3	87.6	+1.6	63.6	-1.6	75.5	0	23.9	100.6	47.1
	Myitkyina . . . . .	458	29.419	+0.09	29.851	29.771	29.111	70.2	67.3	85.0	+0.7	65.8	0	75.4	+0.3	19.2	99.2	47.1
II.—Assam.																		
4	Dibrugarh . . . . .	363	29.637	+0.02	29.860	29.904	29.147	69.9	68.3	82.1	+1.3	65.8	+0.9	74.0	+1.1	16.3	98.5	67.1
	Sibsagar . . . . .	323	29.565	+0.02	29.865	29.931	29.177	69.6	67.3	81.5	0	65.8	+1.0	74.2	+0.5	14.8	98.4	67.1
	Terpar . . . . .	262	29.648	+0.18	29.865	30.016	29.268	70.6	67.9	84.8	+1.7	77	+0.9	76.2	+1.3	19.1	98.8	67.6
	Gauhati . . . . .	184	29.708	+0.08	29.850	30.044	29.326	73.8	69.6	85.6	+1.0	67.1	+1.2	73.8	+1.1	18.5	97.8	67.1
	Dhubri . . . . .	115	29.767	+0.16	29.838	29.107	29.367	72.9	69.3	83.4	+0.8	65.6	+0.9	76.1	+0.7	14.6	97.7	67.1
	Stilshet . . . . .	104	29.811	+0.23	29.889	30.144	29.386	74.0	70.8	87.8	+1.2	77.9	+0.4	77.6	+1.1	19.9	99.7	67.1
	Srimangal . . . . .	66	29.886	...	29.853	30.165	29.433	72.2	69.3	88.9	+1.4	67.8	-0.7	76.9	+0.3	24.1	101.1	59.1
III.—Bengal.																		
5	Cox's Bazar . . . . .	86	29.847	...	29.828	30.154	29.411	75.8	73.0	85.4	...	67	...	77.5	...	15.7	98.5	67.1
	Chittagong . . . . .	87	29.800	+0.11	29.884	30.187	29.375	74.0	71.4	86.1	+1.3	69.4	0	77.8	+0.7	16.7	98.6	67.1
	Nabikhall . . . . .	43	29.846	+0.22	29.830	30.161	29.439	75.8	72.6	85.5	+0.9	70.7	+1.8	78.1	+1.3	14.8	97.3	67.6
	Barisal . . . . .	12	29.866	+0.18	29.821	30.194	29.420	76.5	72.9	85.9	0	70.6	+0.9	78.2	+0.1	18.3	98.9	67.6
	Narayanganj . . . . .	26	29.881	+0.04	29.887	30.185	29.426	75.5	71.4	85.4	+0.1	70.4	-0.1	78.4	0	16.0	101.3	47.1
	Mymensingh . . . . .	63	29.817	+0.14	29.833	30.142	29.402	74.0	70.3	86.3	+1.4	67.6	+0.8	77.7	+1.1	16.8	98.8	67.1
	Bogra . . . . .	75	29.795	+0.11	29.823	30.148	29.344	73.8	70.1	87.3	+0.2	65.3	+0.3	77.7	+0.5	18.9	100.6	47.1
	Dinajpur . . . . .	123	29.780	+0.11	29.819	30.094	29.306	72.8	69.5	86.7	+0.6	70.3	+0.6	77.0	+0.6	19.4	103.3	47.1
	Jalpdiguri . . . . .	265	29.801	+0.23	29.846	29.975	29.216	73.8	69.4	86.7	+1.0	73.8	0	77.0	+1.0	19.4	98.5	67.1
	Saugor Island . . . . .	10	29.866	+0.09	29.803	30.228	29.268	77.8	74.2	85.0	-0.8	70.1	-0.8	79.1	-0.8	12.9	98.0	67.6

N.B.—Elevations in italics indicate barometrical determinations.

a Mean of 12 months.

**ANNUAL SUMMARY, 1919.**

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*lations in India, etc., in the year 1919.*

WIND DIRECTION.								WIND VELOCITY.		HYGROMETRY, 8 HRS.				CLOUD.		RAINFALL.				STATION.				
Number of winds from								Mean velocity of year.	In miles per hour of year.	Normal velocity of year.	Mean humidity at 8 hrs. of year.	Departure from normal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from normal of year.	Mean cloud amount at 8 hrs. of year.	Departure from normal of year.	Number of rainy days during year.	Departure from normal of year.	Normal rainfall of year.	Departure from normal of year.	Heaviest rainfall during year.			
16	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
106	9	111	46	18	14	23	21	6	5.8	...	55	...	-0.04	...	5.9	...	150	-1.3	137.20	169.59	-32.38	5.65	I.—Burma.	
107	2	15	63	63	11	11	8	3	4.2	1.4	+2.8	85	+2	0.024	5.5	+0.9	127	-27.4	136.31	162.94	-26.63	3.63	Victoria Point.	
108	19	26	8	17	16	9	5	3	1.8	1.1	+0.7	87	-1	0.11	5.6	+2.0	127	-18.6	209.89	214.81	-4.98	7.27	Mergui.	
109	4	76	107	34	38	19	6	6	3.6	2.3	+1.3	88	-1	0.04	5.8	+0.5	128	-10.9	216.67	188.91	+27.68	13.08	Tavoy.	
110	22	74	32	30	56	46	32	18	3.7	3.1	+0.6	88	-1	0.07	7.5	+2.2	126	-2.3	102.70	99.10	+3.60	3.50	Moulmein.	
111	16	30	15	24	24	44	23	57	3.2	3.2	0	86	-3	0.39	5.6	+1.1	114	-11.1	108.67	109.41	-3.74	4.65	Bangodti.	
112	47	60	31	23	16	64	30	70	8.2	6.4	+1.8	79	-1	0.42	5.2	+0.1	111	-2.1	112.12	117.81	-5.69	6.47	Bassein.	
113	64	43	9	111	74	4	2	8	2.5	3.4	+0.1	87	+1	0.04	6.4	+1.1	111	-3.5	80.57	88.28	-2.71	3.71	Diamond Island.	
114	7	12	20	7	10	2	1	7	0.9	...	...	85	...	0.21	6.1	...	127	-3.0	215.52	175.43	+40.10	7.86	Toungoo.	
115	68	113	35	35	25	17	1	9	3.1	3.4	+0.7	87	-2	0.14	6.7	+0.7	124	-0.3	239.53	196.87	+43.16	10.33	Kyaukpyn.	
116	12	5	10	156	22	5	8	104	2.8	6.3	-3.5	72	-4	0.95	-0.08	3.6	-0.3	45	-12.8	27.30	35.02	-7.72	2.20	Minbu.
117	...	...	...	...	...	...	...	...	...	...	...	79	0	713	+0.08	4.0	0	59	-3.9	34.56	38.05	-3.40	3.75	Yamethin.
118	0	0	1	31	72	6	0	0	3.9	4.3	-0.4	69	-6	0.65	-0.20	5.6	+1.9	49	-2.2	30.01	33.45	-3.44	3.05	Mandalay.
119	100	7	24	80	23	3	5	53	2.0	...	...	74	-5	0.90	-0.24	5.6	+0.9	42	-2.6	30.74	32.27	-1.59	3.60	Monywa.
120	17	28	11	13	17	77	18	16	2.0	...	...	85	-1	0.62	-0.01	4.2	-2.1	97	-3.6	55.28	62.29	-7.01	2.60	Lashio.
121	8	10	0	0	0	0	0	0	0.7	1.8	-1.1	88	-1	0.79	+0.02	6.9	+1.8	91	-9.4	63.06	72.72	-9.67	4.94	Bhamo.
122	21	29	7	2	3	1	0	3	2.6	...	...	85	-1	0.60	-0.25	6.2	+0.3	98	-8.7	79.33	78.91	+0.41	6.04	Myitkyina.
123	...	...	...	...	...	...	...	...	...	...	...	79	0	713	+0.08	4.0	0	59	-3.9	34.56	38.05	-3.40	3.75	II.—Assam.
124	1	28	40	10	4	3	1	2	0.4	1.5	...	91	0	0.66	+0.09	6.4	+0.8	193	-2.9	110.98	109.06	+1.80	4.50	Dibrugarh.
125	33	64	14	3	29	13	1	3	1.3	1.8	-0.5	97	-2	0.55	-0.25	7.3	+0.8	128	-1.4	97.87	96.54	+1.83	5.28	Sibsagar.
126	3	65	150	7	6	4	15	3	1.5	...	...	87	-2	0.76	-0.08	5.0	-0.1	67	-21.8	52.03	71.98	-19.45	3.00	Tezpur.
127	3	17	28	5	1	2	6	4	0.7	...	...	86	-4	0.68	+0.18	5.3	-1.8	81	-12.9	56.98	66.05	-10.46	3.20	Gauhati.
128	1	101	141	25	25	41	6	1	4.6	3.8	+0.8	85	-6	0.65	-0.08	4.6	+0.1	98	+0.9	95.85	95.41	+0.48	7.73	Dhubri.
129	6	3	1	0	0	0	0	0	0.2	1.7	-1.5	86	-3	0.73	+0.08	4.1	-1.6	110	-17.8	84.96	126.29	-41.48	5.49	Silchar.
130	...	...	...	...	...	...	...	...	...	...	...	80	-1	0.74	-0.15	3.2	...	115	-10.1	90.62	102.50	-11.88	6.00	Srimangal.
131	1	64	41	90	27	3	0	3	2.8	4.6	...	87	0	0.71	...	4.5	...	102	-8.7	149.87	135.29	+14.58	5.50	III.—Bengal.
132	16	88	71	61	10	8	3	4	2.9	3.6	-0.9	87	+1	0.76	0	4.9	+0.2	105	+10.4	124.84	101.64	+23.30	4.75	Cox's Bazar.
133	41	52	14	103	45	30	2	6	2.6	3.6	...	85	-3	0.78	-0.02	4.0	+0.4	114	+0.8	119.37	120.84	-1.47	6.98	Chittagong.
134	23	35	20	57	56	33	18	17	2.5	2.3	+0.2	83	-2	0.78	-0.23	4.6	+0.2	103	+0.7	91.30	81.59	+9.71	6.48	Noakhali.
135	6	8	93	40	48	31	15	17	1.7	3.6	-1.9	82	-4	0.70	-0.27	4.6	-0.7	87	+4.6	76.54	72.44	+4.10	7.00	Barisal.
136	6	17	55	40	8	11	0	5	1.4	3.0	-0.6	82	-5	0.70	-0.18	4.9	-0.1	101	-5.1	78.82	93.83	-15.01	5.12	Narayanganj.
137	18	15	71	19	25	18	10	3	1.0	3.2	-1.2	83	0	0.71	+0.05	4.8	+0.7	78	-7.3	55.62	70.33	-14.61	7.07	Mymensingh.
138	17	56	105	23	23	17	55	14	2.5	3.6	-0.1	80	-3	0.60	-0.12	3.7	-0.7	82	+2.6	63.15	69.68	-6.58	3.75	Bogra.
139	8	15	20	6	9	1	0	10	1.3	...	...	85	-11	0.71	+0.01	2.9	-0.4	75	-27.7	94.81	121.11	-26.30	5.50	Dhaka.
140	73	69	22	17	68	63	16	10	7.7	5.9	+1.8	84	-1	0.16	-0.18	5.2	-0.2	79	-0.8	69.51	69.58	-0.07	4.18	Jalpaiguri.
141	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Saigon Island.	

\* Wind observations of 365 days.

353 "

Mean of 11 months.

Mean of 10 months.

n g

**TABLE**

(2) Abstract of observations taken at 8 hrs. at 23

*N. B.*—Elevations in italics indicate barometrical determinations.

\* Mean of 10 months.

<del>t</del>	<del>"</del>	11	<del>"</del>
<del>t</del>	<del>"</del>	9	<del>"</del>
<del>t</del>	<del>"</del>	8	<del>"</del>
<del>t</del>	<del>"</del>	8	<del>"</del>

—contd.

Conditions in India, etc., in the year 1919.

Serial. No.	WIND DIRECTION.								WIND VELOCITY.			HYGROMETRY, 8 HRS.			CLOUD.		RAINFALL.					STATION.						
	Number of winds from								Mean velocity in miles per hour of year.			Normal velocity of year.		Departure from normal of year.		Mean humidity at 8 hrs. of year.		Departure from normal of year.		Mean vapour tension at 8 hrs. in inches of mercury of year.		Departure from normal of year.		Mean cloud amount at 8 hrs. of year.		Departure from normal of year.		
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44				
20	31	22	23	24	25	26	27	28																				
21	8	18	2	24	22	6	0	7	2'3	...	...	73	- 3	.098	- 014	4'6	+ 1'8	81	+ 0'2	60'98	58'42	+ 2'56	5'75	III.—Bengal—contd.				
22	31	25	32	34	30	100	10	60	3'3	3'2	+ 0'1	65	+ 2	.784	- 006	4'8	+ 0'4	78	- 7'5	63'60	61'82	+ 1'87	7'29					
23	2	3	15	30	18	8	2	4	1'4	2'2	- 0'8	79	- 6	.733	- 049	4'5	- 0'1	80	- 8'2	61'41	66'17	- 4'76	4'46					
24	17	9	8	20	21	38	18	20	1'1	2'3	- 1'2	70	+ 1	.716	- 013	4'9	+ 0'3	77	+ 0'4	50'53	57'84	- 1'31	3'90					
25	12	9	36	28	54	37	9	16	1'9	2'4	- 0'5	80	- 3	.717	- 017	4'7	0	91	+ 14'7	49'05	56'10	- 7'05	3'00	Burdwan.				
26	40	21	8	3	58	88	12	35	2'5	3'5	- 1'0	82	+ 1	.743	- 007	4'9	+ 1'6	83	+ 5'7	82'55	62'09	+ 20'46	5'93	IV.—Bihar and Orissa.				
27	78	37	6	16	43	94	38	32	6'0	6'8	+ 0'1	...	...	...	...	5'6	+ 0'2	75	+ 3'9	82'09	62'92	+ 10'17	7'72					
28	1	15	11	1	6	50	38	0	1'7	2'1	- 0'4	84	+ 5	.788	+ 039	4'9	+ 0'6	96	+ 21'9	67'80	50'30	+ 8'30	2'46					
29	97	51	7	3	48	84	88	13	9'5	...	...	84	+ 1	.843	+ 020	4'8	+ 0'9	65	+ 4'1	60'44	54'00	+ 6'44	4'00					
30	14	19	19	22	11	17	98	93	4'0	...	...	78	+ 1	.720	+ 030	5'2	+ 1'8	83	+ 12'1	54'09	47'04	+ 7'05	2'65					
31	96	84	21	10	21	76	9	46	3'2	2'6	+ 0'6	78	+ 6	.675	+ 024	4'9	+ 1'0	96	+ 22'1	82'17	64'72	+ 17'45	3'88	Sambalpur.				
32	4	15	9	0	7	86	9	3	1'8	1'3	+ 0'5	78	+ 1	.656	+ 015	4'6	+ 1'2	79	+ 4'3	51'71	52'11	- 0'40	5'17	Chabasa.				
33	13	19	12	30	22	42	87	70	8'3	4'6	- 1'3	69	+ 3	.540	+ 000	4'6	+ 0'8	90	+ 10'3	82'03	56'20	+ 25'83	5'49	Ranchi.				
34	4	12	15	16	31	26	98	39	1'5	...	...	70	- 3	.615	- 015	4'5	+ 1'3	70	+ 4'8	63'88	52'51	+ 11'87	4'10	Purulia.				
35	7	11	19	16	2	35	5	3	2'2	...	...	73	+ 1	.602	+ 014	2'8	+ 0'1	83	+ 21'9	62'31	41'81	+ 20'40	3'23	Daltonganj.				
36	14	38	133	20	10	61	46	16	2'5	2'3	+ 0'2	82	- 3	.677	- 012	4'9	+ 1'5	80	+ 9'7	84'23	61'72	+ 2'51	3'45	Purnea.				
37	3	12	52	81	10	98	16	5	4'0	...	...	73	...	.654	...	3'8	...	62	- 0'4	55'05	50'99	+ 4'08	3'48	Monghyr.				
38	5	7	90	12	3	8	31	3	2'5	2'0	- 0'4	74	- 7	.658	- 028	3'3	+ 0'2	56	- 3'1	35'05	51'09	- 16'04	5'05	Darbhanga.				
39	7	30	100	40	15	37	36	14	2'7	...	...	79	...	.668	...	3'6	...	53	- 4'9	32'02	49'13	- 16'21	3'66	Pusa.				
40	2	3	123	19	2	45	51	3	3'2	2'7	+ 0'5	69	- 3	.636	- 020	4'1	+ 0'6	58	+ 1'9	41'68	47'98	- 6'10	3'54	Patna.				
41	7	15	71	29	11	70	66	7	3'5	...	...	72	+ 4	.622	+ 014	4'0	+ 0'7	61	+ 7'7	44'28	41'09	+ 3'19	4'25	Buxar.				
42	14	82	25	16	54	90	21	3	2'2	2'7	- 0'5	68	- 3	.609	- 034	3'7	+ 0'3	78	+ 18'9	58'68	46'48	+ 13'10	6'93	Gaya.				
43	3	4	7	16	1	1	2	3	1'6	...	...	72	- 1	.657	+ 008	3'8	+ 0'5	92	+ 15'7	50'34	50'21	+ 3'13	3'34	Naya Dumka.				
44	8	11	189	4	2	3	75	1	2'1	1'7	+ 0'6	74	- 1	.618	- 026	1'9	- 1'1	50	- 7'1	39'19	50'58	- 11'89	3'27	V.—United Provinces of Agra and Oudh.				
45	4	21	37	37	4	82	36	35	1'9	2'7	- 0'8	69	- 3	.615	- 007	3'6	+ 0'3	61	+ 8'9	44'54	40'18	+ 4'86	4'78	Gorakhpur.				
46	3	17	55	9	1	26	102	18	2'4	3'8	- 1'4	65	- 1	.675	- 007	3'9	+ 0'4	52	+ 2'1	37'73	38'80	- 1'07	3'62	Benares.				
47	25	19	38	41	20	36	66	42	1'9	2'7	- 0'8	68	- 3	.660	- 010	2'2	- 0'3	47	+ 3'7	36'01	35'90	+ 0'11	4'20	Allahabad.				
48	7	10	49	11	1	3	26	0	1'2	2'2	- 1'0	66*	- 3*	.658*	+ 079*	8'6	+ 0'4	55	+ 7'1	46'61	38'53	+ 8'08	4'05	Cawnpore.				
49	32	9	67	38	13	8	26	25	2'2	2'8	- 0'1	71	- 4	.699	- 036	3'2	+ 0'6	39	- 11'7	55'85	45'32	+ 10'53	9'30	Lucknow.				
50	14	24	17	8	5	116	35	22	3'4	2'4	+ 1'0	61	+ 8	.518	- 028	2'1	0	61	+ 16'3	54'01	35'95	+ 18'06	3'85	Bahraich.				
51	16	29	38	21	15	66	45	20	2'5	3'8	- 0'8	68	- 2	.534	+ 009	3'4	+ 0'7	48	+ 10'6	30'74	26'69	+ 4'05	4'80	Jhansi.				
52	26	11	40	38	12	15	61	57	1'6	1'4	+ 0'2	64	- 1	.586	- 009	3'0	- 0'2	44	+ 5'7	25'55	27'30	- 1'75	2'15	Agra.				
53	6	20	39	40	13	9	30	21	1'3	2'0	- 0'7	69	- 3	.560	- 015	4'3	+ 1'4	36	- 11'0	37'91	44'41	- 6'50	4'12	Mainpuri.				
54	0	5	9	75	1	0	0	31	2'0	1'8	+ 0'2	71	0	.526	+ 011	2'6	- 0'3	56	+ 8'6	49'50	42'33	+ 7'17	3'68	Bareilly.				
55	0	5	9	75	1	0	0	31	2'0	1'8	+ 0'2	71	0	.526	+ 011	2'6	- 0'3	56	+ 8'6	49'50	42'33	+ 7'17	3'68	Roorkee.				

\* Mean of 9 months.

## ANNUAL SUMMARY, 1919.

TABLE

(2) Abstract of observations taken at 8 hrs. at 21°

Number of sub-division.	STATION.	Height of barometer above sea-level in feet.	PRESSURE, 8 HRS., IN INCHES.							TEMPERATURE OF AIR.										
			Mean 8 hrs. pressure reduced to 32°.	Departure from normal of year.	Mean 8 hrs. pressure reduced to sea-level and to constant gravity at 46° Lat.	Highest pressure of year.	Lowest pressure of year.	Mean of 8 hrs. dry bulb of year.	Mean of 8 hrs. wet bulb of year.	Mean maximum of year.	Departure from normal of year.	Mean minimum of year.	Departure from normal of year.	Yearly mean of mean between maximum and minimum.	Departure from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
VI.—Punjab.																				
11	Delhi	718	29.124	+·024	29.821	29.484	28.670	71·5	63·3	87·3	-1·4	68·0	+0·5	77·6	-0·5	19·3	113·5	41·6		
	Hissar	725	29.120	+·038	29.826	29.493	28.626	71·6	62·1	90·6	-0·8	63·8	-0·3	77·2	-0·5	26·8	116·0	37·4		
	Patiala	818	29.992	-·003	29.709	29.342	28.513	70·9	64·0	86·7	-0·4	64·2	+0·7	75·5	+0·1	22·5	112·8	37·1		
	Ambala	892	28.929	+·015	29.811	29.287	28.451	70·0	61·8	88·2	+0·6	63·5	+0·8	76·9	+0·7	24·6	115·6	38·6		
	Ludhiana	812	29.011	+·018	29.812	29.390	28.617	69·7	61·6	87·6	-0·3	64·7	+0·8	76·1	+0·3	23·0	115·9	38·9		
	Lahore	702	29.110	+·006	29.800	29.407	28.571	69·3	62·3	86·2	-2·0	63·3	+1·6	75·7	-0·2	24·9	117·5	31·3		
	Sialkot	830	28.988	+·013	29.813	29.369	28.448	68·7	62·3	84·9	-2·6	61·6	-1·3	73·2	-1·9	23·3	118·8	33·9		
	Rawalpindi	1,674	28.162	+·014	29.836	28.519	27.638	67·4	59·1	83·9	-0·2	58·3	+0·5	71·1	+0·1	25·6	115·0	31·4		
12	Khushab	612	29.193	-·009	29.816	29.620	28.607	72·0	61·7	89·5	-0·2	62·8	-1·1	76·2	-0·7	26·7	116·2	33·3		
	Lyallpur	605	29.206	...	29.706	29.603	28.640	69·8	61·9	88·1	...	62·5	...	75·7	...	26·5	116·8	33·6		
	Montgomery	568	29.257	+·008	29.797	29.660	28.711	72·3	62·4	89·9	-1·7	64·3	+0·1	77·1	-0·8	25·7	117·4	32·6		
	Multan	426	29.303	+·008	29.793	29.630	28.800	73·1	64·0	91·0	-0·9	67·3	+1·7	79·1	+0·4	23·7	118·7	37·7		
VII.—North-West Frontier Province.																				
14	Peshawar	1,113	28.725	-·003	29.850	29.123	28.139	84·2	58·1	86·2	+0·9	59·1	-0·2	72·6	+0·3	27·1	119·7	39·0		
	Dera Ismail Khan	590	29.243	+·001	29.820	29.666	28.937	70·6	62·1	80·8	-0·2	63·9	+1·6	76·8	+0·7	28·0	119·2	33·6		
VIII.—Sind.																				
16	Jacobabad	186	29.841	+·011	29.707	30.094	29.090	74·3	63·2	96·2	+0·6	66·5	+1·0	81·4	+0·8	20·7	127·1	34·8		
	Hyderabad	96	29.744	+·003	29.791	30.174	29.047	73·9	65·9	92·5	-6·9	68·3	+0·1	80·4	-0·4	24·2	115·0	40·6		
	Karachi	13	29·87	+·014	29.881	30.261	29.399	74·4	68·9	83·5	-0·6	71·0	-0·2	77·2	-0·4	12·5	96·0	50·1		
IX.—Rajputana.																				
17	Bikaner	771	29.072	+·023	29.820	29.446	28.610	73·0	63·9	92·4	+0·4	66·8	-2·8	79·6	-1·1*	26·6	118·0	38·9		
	Jodhpur	780	29.077	+·012	29.828	29.438	28.611	73·8	62·1	91·5	-1·1	67·6	-0·2	78·6	-0·7	23·9	112·8	42·3		
18	Jaipur	1,431	28.434	+·015	29.838	28.781	28.028	74·0	62·3	89·2	-1·7	65·6	-0·1	77·4	-0·9	23·6	112·5	38·5		
	Ajmer	1,611	28.246	-·002	29.838	28.670	27.814	68·1	60·4	86·6	-2·2	64·8	-0·3	75·6	-1·3	21·8	110·2	37·7		
	Kotah	882	29.018	+·006	29.814	29.383	28.533	77·0	65·1	90·7	-1·6	69·4	-0·7	80·0	-1·1	21·3	115·6	40·4		
X.—Bombay.																				
19	Deesa	466	29.417	+·015	29.844	29.714	29.038	75·8	65·5	94·0	-0·1	67·3	+0·8	80·6	+0·1	26·8	113·8	45·7		
	Bhuj	334	29.543	+·008	29.833	29.860	29.132	75·6	69·1	90·3	-0·9	69·2*	+0·6	80·3*	-0·1	22·2*	110·9	42·7		
	Jamnagar	61	29.830	0	29.838	30·135	29.434	76·2	70·2	89·0	-0·6	67·7	-0·6	78·3	-0·6	21·3	107·8	47·6		
	Dwarka	37	29.864	+·004	29.847	30·179	29.464	76·7	71·6	84·1	0	73·3	+0·8	78·7	+0·4	10·9	98·8	55·1		
	Rajkot	429	29.441	-·012	29.826	29·721	29.089	74·7	65·6	92·2	-0·8	68·7	+2·7	80·5	+0·9	23·5	111·9	45·9		
	Veraval	18	29.969	-·006	29.830	30·136	29.509	75·5	69·4	84·2	-0·7	71·8	+0·8	78·0	+0·1	12·8	97·6	53·6		
	Bhavnagar Para.	55	29.826	-·011	29.828	30·096	29·416	76·3	68·3	84·4	-0·2	68·8	-0·5	81·1	-0·3	24·6	111·8	45·6		
	Surat	39	29.852	-·006	29.835	30·128	29.437	77·3	70·0	91·2*	-0·6	71·1	+1·4	81·7*	+0·5	19·0	107·6	51·8		
	Ahmadabad	163	29.730	+·006	29.844	30·051	29.338	77·5	68·7	94·7	+0·8	71·1	+0·4	82·9	+0·8	23·7	114·9	50·0		
25	Bombay	37	29.868	-·005	29.845	30·078	29·488	77·8	73·1	86·4	+0·4	75·5	+0·6	80·9	+0·5	10·9	94·0	61·1		
	Ratnagiri	207	29.099	-·002	29.847	29·606	29·418	79·2	72·5	86·4	-0·9	73·8	+0·7	80·1	-0·1	13·6	96·7	60·5		

N.B.—Elevations in parentheses indicate barometrical determinations.

\* Mean of 11 months.

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**-contd.**

*ations in India, etc., in the year 1919.*

WIND DIRECTION.										WIND VELOCITY.			HYGROMETRY, 8 HRS.			CLOUD.			RAINFALL.			STATION.									
Number of winds from										Mean velocity in miles per hour of year.	Normal velocity of year.	Departure from normal of year.	Mean humidity at 8 hrs. of year.	Departure from normal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from normal of year.	Mean cloud amount at 8 hrs. of year.	Departure from normal of year.	Number of rainy days during year.	Departure from normal of year.	Rainfall of year.	Normal rainfall of year.	Departure from normal of year.	Heaviest rainfall during year.							
N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
5	14	10	20	61	4	10	85	66	2·8	2·5	+0·3	59	0	485	-0·010	3·7	-0·5	30	-0·7	17·33	27·38	-10·15	1·57	Delhi.	VI.—Punjab.						
2	19	10	34	49	52	86	59	15	4·2	3·5	+0·7	59	-1	465	-0·008	2·8	-0·3	27	+3·2	12·11	14·02	-1·91	1·46	Hissar.							
6	27	29	16	107	12	14	39	45	3·9	3·4	+1·0	64	-8	462	+0·020	2·7	0	37	+0·2	27·38	26·59	+1·79	3·07	Patiala.							
4	45	6	63	78	11	8	13	44	3·4	1·5	+1·0	64	-8	490	-0·047	3·5	+0·7	40	-2·7	26·38	30·63	-4·25	2·90	Ambala.							
8	10	17	2	33	22	0	5	9	1·4	1·4	0	64	-1	486	-0·018	3·1	+0·1	36	-0·3	31·52	28·58	+2·94	5·57	Ludhiana.							
9	11	21	23	65	23	16	22	26	1·5	1·8	-0·3	69	+2	527	+0·015	2·6	0	29	+0·9	22·11	19·58	+2·53	6·73	Lahore.							
3	50	62	73	41	5	3	10	19	1·5	1·5	0	72	+6	529	+0·022	2·4	+0·1	46	+5·6	38·92	30·69	+8·23	3·10	Sialkot.							
14	19	23	26	28	18	22	45	20	1·7	1·6	+0·1	64	-1	447	+0·001	2·9	-0·3	52	+3·9	47·42	34·06	+13·36	4·23	Rawalpindi.							
10	17	72	77	12	10	11	6	1	3·6	3·6	0	56	+1	467	+0·012	2·3	+0·2	25	+1·4	14·07	14·85	-0·78	2·83	Khushab.							
11	6	44	80	54	29	64	11	26	2·0	...	...	65	...	500	...	2·8	...	24	...	12·54	13·13	-0·59	3·35	Lyallpur.							
11	25	29	41	53	63	52	28	21	3·9	4·3	-0·4	57	+5	481	+0·030	2·1	0	15	-3·5	9·63	10·47	-0·84	1·88	Montgomery.							
7	45	37	1	36	56	18	1	10	1·7	1·5	+0·2	60	+1	583	+0·024	1·7	+0·1	16	+3·5	10·74	6·92	+3·82	3·10	Multan.							
14	21	1	1	4	17	4	2	1	0·5	2·4	-1·9	70	+7	465	+0·013	1·9	-1·1	30	+4·0	17·37	13·42	+3·95	2·15	Peshawar.	VII.—North-West Frontier Province.						
35	4	73	4	27	1	4	0	17	1·9	1·3	+0·6	62	-3	506	-0·016	1·6	-0·4	13	-3·3	4·93	9·32	-4·39	1·10	Dera Ismail Khan.							
16	1	18	14	64	17	11	0	7	1·8	2·5	-0·7	81	-7	496	-0·037	1·0	-0·8	6	-1·4	3·23	3·59	-0·36	1·92	Jacobabad.	VIII.—Sindh.						
33	45	8	3	1	43	113	23	3	3·7	8·1	-4·4	63	+5	566	+0·031	0·9	-1·4	8	-1·3	7·76	7·13	+0·63	3·94	Hyderabad.							
11	39	71	16	0	3	63	120	33	9·1	9·2	-0·1	73	0	667	-0·010	3·9	+0·4	8	-1·3	3·39	7·64	-4·25	1·45	Karachi.							
54	10	9	43	69	63	74	44	9	4·1	4·3	-0·2	59	+6	521	+0·021	1·9	-0·5	24	+5·2	18·95	11·00	+7·76	4·43	Bikaner.	IX.—Rajputana.						
60	4	113	5	5	8	180	9	3	3·4	...	...	49	0	439	-0·012	4·0	+0·9	23	+4·9	12·24	12·63	-0·89	2·26	Jodhpur.							
91	28	47	50	15	3	12	59	60	3·3	3·2	+0·1	53	-2	454	-0·026	3·3	+0·2	44	+9·2	26·90	23·63	+3·17	3·66	Jaipur.							
37	2	4	1	4	2	48	65	2	3·0	3·6	-0·6	65	+3	470	-0·036	1·5	-1·3	29	-0·1	16·00	20·21	-4·21	1·50	Ajmer.							
55	15	13	5	22	1	62	33	52	2·4	...	...	52	+3	490	+0·019	3·6	+1·4	45	+10·8	29·04	26·51	+2·53	2·75	Kotah.							
45	10	64	54	12	16	87	45	32	6·3	7·5	-1·2	57	+1	540	+0·017	3·6	+0·4	36	+8·1	44·99	23·57	+21·42	8·78	Deesa.	X.—Bombay.						
109	29	1	7	0	12	6	194	7	6·1	8·1	-2·0	71	+4	664	+0·023	3·3	+0·3	21	+4·7	14·37	14·36	+0·01	4·20	Bhuj.							
8	3	46	47	3	16	84	118	41	8·2	...	...	73	+6	679	+0·037	3·4	+0·3	23	+2·3	22·64	18·53	+4·11	5·49	Jamnagar.							
7	47	55	20	4	15	73	94	52	9·6	...	...	76	-1	722	-0·027	3·3	0	19	+2·3	11·98	14·50	-3·12	1·88	Dwarka.							
38	35	38	17	8	18	100	78	35	7·8	6·6	+1·2	59	-7?	543	-0·088?	4·6	+1·7	36	+5·2	32·53	26·06	+6·47	7·05	Rajkot.							
54	100	38	6	9	9	50	78	50	8·2	8·1	+2·1	73	+3	676	+0·007	3·3	-0·2	19	-5·7	18·11	18·28	-5·17	1·66	Veraval.							
11	26	12	4	12	16	94	75	115	4·6	7·3	-2·7	64	+1	611	+0·008	3·7	+0·5	26	-3·9	17·74	22·40	-4·66	2·23	Bhavnagar Para.							
117	35	39	34	34	46	45	15	10	3·2	5·5	-2·3	69	-1	671	-0·001	4·1	+0·8	47	+0·8	40·09	40·98	-0·89	5·23	Surat.							
60	3	66	22	13	3	85	14	80	3·5	3·6	-0·1	62	+4	613	+0·042	3·0	-0·5	47	+12·9	29·27	29·15	+0·12	3·00	Ahmadabad.							
9	45	67	76	31	9	37	65	28	6·8	8·6	-1·8	80	+2	769	+0·001	4·1	-0·2	78	+6·1	68·32	71·15	-2·83	10·92	Bombay.							
53	54	34	37	43	16	43	46	40	7·4	6·2	+1·2	71	-2	712	-0·010	3·9	0	95	+2·9	92·28	100·33	-8·04	6·93	Ratnagiri.							

## (2) Abstract of observations taken at 8 hrs. at 21°

Number of sub-division.	STATION.	PRESSURE, 8 HRS., IN INCHES.										TEMPERATURE OF AIR.									
		Height of barometer above sea-level in feet.					Mean 8 hrs. pressure reduced to 32°.					Mean 8 hrs. pressure reduced to sea-level and to constant gravity at 45° Lat.					Highest pressure of year.				
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
1	2																				
26	X.—Bombay—concl.																				
	Marmagao	60	29.862	-'001	29.856	30.042	29.645	78.2	75.0	85.2	-0.7	74.2*	+1.2*	79.3*	-0.4*	10.0*	94.5	65.7			
	Karwar	44	29.881	+'002	29.880	30.058	29.674	78.0	73.2	86.6	+0.5	78.3	+0.6	80.0	+0.5	13.3	94.7	61.6			
	Malegaon	1,430	28.451	-'008	29.833	28.726	28.006	75.7	65.5	93.1	+1.2	68.0	+0.8	79.5	+1.1	27.1	109.4	41.8			
	Ahmadnagar	2,154	27.756	-'005	29.831	27.003	27.441	74.2	63.6	90.6	+1.2	65.1	+1.3	77.0	+1.3	25.4	110.3	43.8			
	Poona	1,846	28.060	-'003	29.857	28.287	27.760	71.8	64.9	89.3	-0.2	65.0	+0.4	77.2	+0.1	24.3	105.5	40.1			
	Sholapur	1,580	28.305	-'004	29.831	28.540	28.028	76.7	65.6	93.0	+0.1	69.6	+1.5	81.3	+0.8	23.4	107.0	51.1			
	Bijapur	1,948	27.965	+'007	29.838	28.190	27.720	75.9	67.2	90.3	-0.4	69.3	+1.7	79.8	+0.7	21.0	104.2	54.0			
	Belgaum	2,568	27.390	+'013	29.860	27.584	27.160	70.6	65.0	84.6	+0.1	64.6	+0.7	74.6	+0.4	20.0	101.6	51.1			
20	XI.—Central India.																				
	Neemuch	1,626	28.240	+'003	29.833	28.556	28.011	73.9	63.6	87.9	-1.0	65.2	+0.7	76.6	-0.1	22.7	110.9	40.7			
	Indore	1,823	28.070	+'015	29.824	28.361	27.831	74.1	65.5	88.5	+0.4	64.8	+1.1	76.6	+0.7	23.7	110.1	45.7			
	Nowrangpur	754	29.068	+'006	29.814	29.472	28.693	71.2	63.5	88.3	-1.1	65.7	0	77.0	-0.5	22.6	116.0	39.7			
	Sutna	1,041	28.802	+'016	29.815	29.175	28.313	72.5	64.6	86.3	-1.9	66.5	+0.6	78.4	-0.7	19.8	112.8	46.0			
	XII.—Central Provinces.																				
	Buldana	2,134	...	...	...	...	...	74.9	65.3	88.1	+0.5	68.6	+0.6	78.3	+0.5	19.8	107.1	56.0			
	Akola	925	28.952	+'003	29.832	29.261	28.589	77.0	67.3	93.7	+0.7	69.3	+2.1	81.6	+1.4	24.4	114.0	44.7			
	Amravati	1,315	28.653	0	29.820	28.589	28.292	77.2	66.9	91.6	-0.5	70.1	+1.1	80.9	+0.3	21.4	114.0	49.7			
21	Khandwa	1,044	28.827	+'001	29.833	29.141	28.458	74.9	65.7	91.8	-0.2	67.5	+0.5	79.6	+0.1	24.3	111.6	43.7			
	Hoshangabad	1,006	28.867	+'008	29.837	29.213	28.441	73.7	66.1	88.9	-1.5	66.8	-0.1	77.9	-0.8	22.1	114.7	45.7			
	Saugor	1,807	28.030	-'023	29.795?	28.344	27.511	71.6	61.5	87.1	-0.8	66.4	-0.1	76.7	-0.5	20.6	113.0	45.0			
	Jubbulpore	1,327	28.508	-'006?	29.800?	28.850	28.043	72.1	64.6	86.5	-2.0	66.0	+1.6	76.3	-0.3	20.5	111.9	40.7			
	Seoni	2,033	27.845	+'014	29.824	28.155	27.413	72.7	64.0	85.2	-2.7	65.4	+0.7	75.3	-1.0	19.8	109.0	44.7			
	Nagpur	1,017	28.857	+'018	29.830	30.180	28.453	75.8	67.1	90.4	-1.7	68.9	+0.1	79.6	-0.8	21.5	114.7	46.0			
	Pendra	2,040	27.884	+'024	29.826	29.154	27.314	71.5	64.1	83.6	-1.9	64.3	-0.7	74.0	-1.3	19.3	109.3	42.7			
	Raipur	970	28.882	+'004	29.809	29.210	28.390	75.1	67.5	88.3	-2.0	68.6†	-0.6†	78.7†	-1.3†	20.1†	115.0	46.0			
	Chanda	684	29.231	-'008	29.815	29.550	28.668	77.7	69.8	92.1	-0.8	60.9	+1.3	81.0	+0.3	22.2	114.1	45.7			
24	Jagdalpur	1,813	28.072	...	29.828	28.353	27.689	73.1	68.5	86.8	...	68.6	...	76.7	...	20.2	105.7	44.7			
	XIII.—Hyderabad.																				
	Aurangabad	1,905	27.999	-'006	29.835	28.255	27.690	75.7	65.0	90.9	+0.1	68.0	+2.4	79.4	+1.3	22.9	106.6	44.7			
	Nizamabad	1,248	28.630	...	29.829	28.919	28.326	78.0	68.1	93.6	+1.9	68.9	+1.5	81.7	+1.7	23.6	111.4	46.7			
	Gulbarga	1,503	28.390	+'004	29.843	28.642	28.139	75.7	67.6	93.6	+1.0	69.7	+0.7	81.6	+0.9	23.9	108.9	51.0			
	Raichur	1,311	28.590	+'015	29.840	28.827	28.344	78.1	69.6	93.0	+0.7	72.6	+0.9	82.8	+0.8	20.6	108.6	55.7			
	Hyderabad (Deccan)	1,738	28.189	+'018	29.841	28.440	27.916	75.9	68.7	90.0	-0.5	70.9	+1.4	80.6	+0.8	19.1	107.9	55.7			
	Hanamkonda	877	29.011	+'014	29.834	29.200	28.687	78.0	82.0	92.0	+0.2	73.2	+1.4	82.6	+0.8	18.8	110.8	55.7			

N. B.—Elevations in italics indicate barometrical determinations. C.P.

\* Mean of 8 months.  
† ... .. 11 ..

3—contd.

*ations in India, etc., in the year 1919.*

WIND DIRECTION.								WIND VELOCITY.				HYGROMETRY, 8 HRS.				CLOUD.		RAINFALL.						STATION.	
Number of winds from																									
Com. Dir.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Mean velocity in miles per hour of year.	Normal velocity of year.	Departure from nor- mal of year.	Mean humidity at 8 hrs. of year.	Departure from nor- mal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from nor- mal of year.	Mean cloud amount at 8 hrs. of year.	Departure from nor- mal of year.	Number of rainy days during year.	Departure from nor- mal of year.	Rainfall of year.	Normal rainfall of year.	Departure from nor- mal of year.	Heaviest rainfall year.	rainfall during year.	
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
74	45	64	37	7	15	8	70	50	5'9	6'7	-0'8	86	+ 2	.820	+0'016	5'8	+1'5	107	+12'6	96'00	93'84	+ 2'25	6'02	Marmagao.	
31	58	7	0	3	44	14	0	8	2'5	3'0	-0'5	87	+ 4	.783	+0'036	4'3	+0'5	109	+ 5'8	116'04	120'63	- 4'59	5'85	Karwar.	
62	7	14	4	9	9	147	83	30	6'1	6'5	-0'4	57	- 1	.523	+0'007	3'8	+0'8	87	+ 2'0	26'90	22'58	+ 4'32	2'88	Malegaon.	
45	34	7	4	19	13	28	50	65	5'4	8'3	-2'0	58	- 6	.469	-0'056	2'9	-0'1	44	+ 8'7	24'26	22'33	+ 1'93	2'97	Ahmadnagar.	
07	2	2	23	15	2	21	115	48	8'4	7'6	-1'2	60	+ 6	.546	+0'043	4'6	+0'9	53	+ 6'2	31'38	27'25	+ 4'11	1'96	Poona.	
26	13	29	33	57	15	58	48	84	7'8	7'1	+0'7	55	0	.498	+0'002	4'5	+0'6	40	- 1'3	30'28	28'52	+ 1'76	3'02	Sholapur.	
95	36	24	18	14	27	25	80	46	3'6	4'7	-1'1	64	- 3	.564	-0'015	3'1	-0'6	38	+ 1'8	22'03	20'50	+ 1'53	2'13	Bijapur.	
98	12	22	19	5	4	43	62	10	3'8	11'0	-7'2	76	+ 5	.557	+0'020	5'4	+1'0	95	+13'7	43'84	50'86	-7'02	3'11	Belgaum.	
																		X.—Bombay—contd.							
88	17	31	71	12	6	30	101	11	5'4	6'4	-1'0	59	+ 1	.498	-0'001	2'7	-0'1	49	+13'7	31'33	28'03	+ 3'30	4'82	Neemuch.	
23	7	31	22	8	2	3	181	38	2'9	3'0	-0'1	64	+ 2	.543	+0'021	3'8	+0'2	63	+18'2	51'17	32'34	+18'83	5'02	Indore.	
15	10	25	27	26	21	48	59	34	2'0	1'9	+0'1	67	+ 2	.522	-0'017	4'5	+0'8	66	+17'9	63'40	42'86	+20'63	5'46	Nowgong.	
80	9	9	25	6	24	53	47	10	2'3	4'4	-2'1	68	+ 7	.543	+0'032	3'3	-0'4	63	+8'3	68'24	44'34	+21'90	11'80	Sutna.	
																		XI.—Central India.							
2	7	15	54	46	3	28	120	90	6'3	5'7	+0'6	59	...	.513	...	4'2	...	44	- 7'5	33'25	34'62	- 1'37	2'83	Buldana.	
89	9	37	64	14	10	38	70	76	5'1	4'4	+0'7	60	+ 3	.552	+0'042	4'8	+1'2	49	+ 3'6	27'77	31'99	- 4'22	3'02	Akola.	
58	13	52	68	17	11	17	86	43	5'2	4'2	+1'0	57	- 1	.518	-0'011	3'7	+0'2	54	+ 6'5	32'17	33'47	- 1'30	3'15	Amraoti.	
28	13	49	39	21	21	28	119	62	5'3	4'4	+0'9	61	+ 4	.532	+0'038	3'5	+0'4	53	+12'2	34'31	29'54	+ 4'77	2'61	Khandwa.	
64	11	73	3	10	0	82	4	19	2'0	2'3	-0'3	68	+ 4	.568	-0'022	4'0	+0'6	62	+ 7'1	71'57	48'27	+23'30	11'58	Hoshangabad.	
55	6	38	50	37	21	28	95	35	4'9	3'2	+1'7	57	+ 1	.443	-0'033	3'8	+0'7	74	+18'9	64'34	44'76	+19'58	5'08	Sangor.	
79	18	20	13	81	51	40	44	19	1'9	2'3	-0'4	67	0	.539	+0'015	3'7	+0'4	77	+13'6	48'52	55'01	+20'51	5'85	Jubbulpore.	
105	38	26	6	5	18	25	31	21	1'4	2'7	-1'3	64	+ 2	.503	-0'004	4'0	+0'8	96	+25'9	75'08	53'46	+22'62	4'21	Seoni.	
35	30	71	69	15	4	12	77	52	3'6	4'1	-0'5	64	+ 5	.567	+0'032	3'6	-0'2	73	+10'5	58'47	49'16	+ 9'31	3'60	Nagpur.	
203	18	10	9	20	28	31	10	37	3'4	...	...	68	+ 8	.525	+0'045	2'6	-0'8	80	+ 7'9	64'35	49'19	+16'16	3'35	Pendra.	
91	18	33	37	13	17	77	58	21	2'0	4'3	-1'4	69	+ 6	.600	+0'040	5'9	+2'1	72	+ 8'7	71'29	50'02	+21'27	7'78	Raipur.	
16	25	39	51	47	18	74	58	37	3'7	2'7	+1'0	68	+ 4	.637	+0'051	4'5	+0'9	63	+ 0'3	44'87	52'68	- 7'31	3'52	Chanda.	
101	12	1	8	4	41	31	73	4	2'1	...	...	79	...	.655	...	4'5	...	103	+24'6	76'40	61'33	+15'16	4'74	Jagdalpur.	
																		XIII.—Hyderabad.							
43	27	32	72	36	8	36	88	28	8'1	...	...	57	+ 3	.500	+0'014	4'5	+1'2	45	+ 1'4	22'75	27'73	- 5'03	2'62	Aurangabad.	
70	17	42	20	21	32	71	61	31	3'2	...	...	61	- 5	.565	-0'051	4'1	+0'6	61	+ 6'0	31'94	40'88	- 8'89	2'80	Nizamabad.	
46	28	50	55	15	25	39	90	24	6'0(a)	7'4	-1'4	66	+ 3	.578	-0'002	3'4	-0'2	58	+10'1	34'08	31'37	+ 2'66	2'50	Gulbarga.	
86	18	16	31	57	41	58	77	38	6'0	7'1	-0'5	65	+ 2	.618	+0'021	4'4	+0'9	50	+ 5'7	23'48	27'64	- 4'16	3'45	Raichur.	
106	6	11	35	55	17	13	102	20	4'8	4'0	+0'6	69	+ 1	.614	+0'028	4'8	+0'9	55	+ 6'0	38'05	31'62	+ 6'43	3'04	Hyderabad (Deccan).	
101	11	5	2	60	72	20	50	35	3'5	...	...	68	+ 2	.669	+0'040	4'8	+0'7	62	+12'0	33'17	34'53	- 1'36	2'52	Hanamkonda.	

(a) Mean of 11 months.

\* Mean of 10 months.

## (2) Abstract of observations taken at 8 hrs. at 214

Number of sub-division.	STATION.	Height of barometer above sea-level in feet.	PRESSURE, 8 HRS., IN INCHES.								TEMPERATURE OF AIR.									
			Mean 8 hrs. pressure reduced to 35°.		Departure from normal of year.		Mean 8 hrs. pressure reduced to sea-level and to constant gravity at 35° Lat.		Highest pressure of year.		Lowest pressure of year.		Mean of 8 hrs. dry bulb of year.		Mean maximum of year.		Departure from normal of year.		Mean minimum of year.	
			4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1	3	3																		
XIV.—Mysore.																				
29	Chitaldrug	2,405	27.528	+.004	29.837	27.708	27.827	75.8	67.6	87.1	+0.1	68.5	+1.1	77.9	+0.6	18.6	101.3	580		
	Hassan	3,149	26.840	+.013	29.858	27.009	26.663	70.3	66.2	88.6	+0.8	64.5	+2.1	74.1	+1.2	19.2	97.2	527		
	Bangalore	3,021	26.980	+.007	29.855	27.140	26.765	70.9	66.3	85.3	+0.8	65.4	+1.2	75.4	+1.0	19.6	98.3	512		
	Mysore	2,618	27.443	+.004	29.958	27.610	27.269	73.5	67.7	86.7	+0.3	67.2	+1.4	77.0	+0.9	19.5	98.9	566		
XV.—Madras.																				
30	Mangalore	72	29.866	-.004	29.869	30.027	29.704	80.3	75.0	87.7	+0.3	74.0	+1.1	81.3	+0.9	12.8	95.0	681		
	Calicut	27	29.905	-.003	29.861	30.055	29.755	78.7	75.9	86.0	-0.7	75.4	+1.1	80.7	+0.3	10.6	93.8	654		
	Cochin	9	29.939	+.007	29.876	30.082	29.797	80.0	75.3	87.4	-0.4	76.7	+0.8	81.5	+0.2	11.7	94.7	698		
	Trivandrum	198	29.745	+.013	29.874	29.900	29.601	78.0	74.0	84.9	+0.8	74.9	-0.3	79.9	+0.3	9.0	92.4	698		
31	Pamban	37	29.875	-.005	29.840	30.077	29.651	81.8*	77.2	87.3	-0.6	79.1	+1.7	83.2	+0.6	8.2	95.0	743		
	Madura	447	29.478	+.007	29.865	29.865	29.237	81.3	74.7	93.8	0	75.7	+1.8	84.7	+0.9	18.1	108.2	658		
	Pudukkottai	318	29.611	+.011	29.860	29.803	29.305	80.6	73.5	93.9	+0.6	75.8	+1.3	84.6	+0.9	18.6	105.6	683		
	Negapatam	31	29.886	+.008	29.846	30.003	29.660	81.4	75.7	90.0	-0.1	77.3	+1.1	83.7	+0.5	12.7	104.9	683		
	Trichinopoly	265	29.671	+.008	29.865	29.889	29.444	81.3	74.5	95.1	+0.8	75.1	+0.9	85.1	+0.9	20.0	108.5	644		
	Coimbatore	1,341	29.694	+.013	29.860	29.788	29.393	77.3	71.4	90.1	+0.1	70.8	+1.1	80.5	+0.6	19.3	108.1	583		
	Salem	913	29.017	+.016	29.868	29.221	29.802	77.6	72.5	93.3	+0.2	73.6	+1.6	82.9	+0.9	20.8	106.7	583		
	Cuddalore	87	29.877	+.005	29.844	30.107	29.643	80.7	75.8	90.1	-0.5	75.9	+1.4	83.0	+0.5	14.3	106.2	682		
	Vellore	707	29.197	-.006	29.844	29.434	29.938	78.8	73.2	93.2	+1.8	73.3	-0.8	83.2	+1.3	19.9	106.6	598		
	Madras	22	29.886	+.001	29.839	30.129	29.621	81.8	76.2	91.3	+0.3	76.1	+1.3	83.7	+0.8	16.1	106.7	645		
32	Cuddapah	428	29.476	0	29.841	29.724	29.224	81.6	74.2	95.3	-0.5	75.9	+1.4	85.6	+0.6	19.4	100.2	681		
	Bellary	1,475	28.431	+.001	29.837	28.663	28.205	78.9	69.6	93.5	+0.2	72.1	+1.3	83.8	+0.7	21.4	102.1	657		
	Kurnool	923	28.978	+.009	29.844	29.225	28.731	78.0	71.2	93.9	0	73.4	+2.6	83.7	+1.3	20.5	107.5	658		
33	Nellore	66	29.828	0	29.829	30.089	29.537	81.2	76.9	92.5	-1.5	76.1	+1.0	84.8	-0.3	18.4	108.8	653		
	Masulipatam	15	29.885	+.004	29.835	30.180	29.539	80.7	75.7	90.1	-0.6	76.0	+0.5	82.6	+0.1	15.3	111.3	632		
	Cocanada	26	29.868	+.009	29.831	30.169	29.409	79.7	75.6	89.1	-0.4	75.3	+0.3	83.2	-0.1	13.8	111.6	636		
	Walair (Vizagapatam)	296	29.835	+.003	29.812	30.162	29.373	81.0	75.0	87.2	+0.2	77.2	+1.8	82.3	+1.0	9.0	108.5	642		
	Calingapatam	19	29.854	...	29.810	30.179	29.370	79.0	74.9	88.9	...	74.3	...	81.6	...	14.6	108.2	583		
	Gopalpur	33	29.811	+.013	29.808	30.184	29.241	78.8	74.9	88.5	+0.5	74.7	+1.6	80.6	+1.1	11.9	99.6	580		
Bay Islands.																				
1	P. V. Fraser	8	29.840		29.810	30.212	29.135	81.2	76.5	...	...	...	...	...	...	...	...	...	...	
	Port Blair	58	29.861	+.008	29.849	30.068	29.600	81.8	77.2	87.1	-0.1	77.6	+0.6	82.8	+0.3	9.6	96.3	707		
	Table Island		29.817	+.002	29.841	30.023	29.478	81.1	76.7	85.4	-0.3	78.4	+1.3	81.9	+0.5	7.1	98.5	717		
Kashmir.																				
13	Muzaffarabad	...	27.488	...	...	27.908	27.053	64.8	56.9	80.0	...	55.9	...	67.7	...	24.6	111.0	379		
	Srinagar	5,204	24.996	+.000	24.887	25.278	24.504	50.9	53.6	65.6	-0.5	49.7	-0.4	54.7	-0.5	21.0	98.8	377		
	Gulmarg	8,669	21.815	+.006	21.788	21.900	21.671	61.6	56.6	69.0	+2.8	48.9	+1.9	56.9	+2.1	20.2	88.7	377		
	Dms	10,059	20.830	+.085	20.798	21.100	20.450	29.3	47.52	47.0	-4.0	31.2	-0.1	34.1	-2.1	24.6	84.9	-340		

N. B.—Elevations in italics indicate barometrical determinations.

NOTE.—The barometric readings are not reduced to sea-level, in the case of hill or plateau stations, the elevations of which exceed 8,300 feet.

\* Mean of 11 months.

† " " " "

‡ " " " " "

# ANNUAL SUMMARY, 1919.

XV

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lations in India, etc., in the year 1919.

Cabin. 20	WIND DIRECTION.								WIND VELOCITY.			HYGROMETER, 8 HRS.			CLOUD.			RAINFALL.				STATION. 44								
	Number of winds from								Mean Velocity in miles per hour of year.			Normal velocity of year.			Departure from normal of year.			Rainfall.												
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
71	1	5	42	35	10	82	95	24	4·7	5·9	-1·2	73	+3	'600	+·020	5·2	+0·4	56	+ 8·6	31·36	24·52	+6·84	2·55	XIV.—Mysore.						
102	10	11	46	18	0	62	92	34	5·0	2·6	+2·4	81	+4	'599	+·020	4·7	-0·9	66	- 0·5	36·88	35·30	+0·47	2·03	Chitaldrug.						
19	7	27	57	46	19	85	111	14	6·2	4·6	+1·6	78	0	'591	+·010	6·9	+0·8	68	+ 9·7	40·90	35·10	+5·80	2·02	Hassan.						
37	8	31	32	28	31	88	80	24	5·7	7·3	-1·6	73	-4	'604	-·004	5·3	-0·6	57	+ 1·5	33·87	31·21	+2·66	2·54	Bangalore.						
14	61	61	142	22	12	4	38	31	4·0	2·1	+2·8	79	+2	'802	+·029	5·1	-0·1	126	+10·1	110·02	126·43	-7·41	3·52	Mysore.						
110	14	21	11	10	5	8	25	61	3·8	6·3	-2·5	87	+4	'856	+·048	5·2	+0·3	120	+ 8·4	123·23	117·20	+5·04	5·62	Calicut.						
44	14	86	157	25	5	4	16	15	4·6	4·0	+0·6	80	-1	'815	+·006	4·7	-0·2	152	+23·3	129·22	114·80	+14·63	4·07	Cochin.						
97	55	49	25	2	0	3	9	125	4·1	4·4	-0·3	86	+4	'825	+·035	6·5	+1·0	117	+22·6	79·87	64·16	+15·71	5·86	Trivandrum.						
22	33	42	49	42	58	87	10	23	7·0	7·6	-0·5	61a	+1	'864a	-·005	3·3	-0·2	55	+ 9·3	47·07	36·84	+10·23	4·53	Pamban.						
21	54	63	61	8	5	11	75	88	4·1	3·1	+1·0	73	+2	'772	+·024	6·6	+2·3?	66	+17·4	38·23	33·63	+4·60	2·04	Madura.						
121	74	66	8	8	14	14	42	43	4·0	...	...	71	-3	'730	-·024	4·8	-1·1	57	+ 2·8	38·45	35·35	+3·10	2·48	Pudukkottai.						
20	14	40	18	28	10	68	97	70	5·7*	5·0	+0·7	76	+1	'816	+·008	5·2	+0·1	57	+ 0·9	74·01	51·15	+20·46	8·09	Negapatam.						
21	44	72	11	9	15	72	84	37	3·8	4·2	-0·4	72	0	'760	+·018	4·5	-0·1	55	+ 8·8	43·69	32·66	+11·03	2·59	Trichinopoly.						
139	15	75	22	10	14	71	17	2	4·0	3·1	+0·9	74	-9	'696	-·038	3·4	-1·6	44	- 0·3	21·33	22·20	-0·87	1·81	Coimbatore.						
86	9	73	32	8	38	100	24	3	3·7	3·1	+0·6	78	+1	'734	-·011	4·1	-0·4	72	+ 8·4	41·87	39·43	+2·44	2·48	Salem.						
53	38	5	1	6	25	133	40	64	5·6	1·8	+3·8	79	-2	'826	-·011	5·4	+1·1	56	- 0·6	46·01	52·68	-6·67	4·68	Cuddalore.						
232	1	0	7	7	0	0	37	81	3·1	...	...	78	+3	'750	+·032	3·7	-0·2	60	+ 4·0	42·78	42·50	+0·28	3·00	Vellore.						
63	29	11	5	17	37	129	48	28	3·7	5·0	-1·3	77	0	'826	+·015	4·9	0	58	+ 0·8	49·36	40·85	-0·40	4·29	Mudras.						
98	26	6	23	66	26	6	62	60	...	...	...	70	+3	'748	+·039	4·8	+0·5	50	+ 4·5	35·32	31·03	+4·29	3·82	Cuddapah.						
60	10	9	34	47	24	34	81	67	4·7	4·8	-0·1	63	+2	'608	+·089	4·7	+0·1	40	+ 5·2	23·42	20·13	+3·29	2·78	Bellary.						
138	6	7	11	35	20	51	68	32	4·6	...	...	71	+3	'680	+·042	4·3	+0·5	48	+ 1·0	20·31	26·08	-5·77	1·85	Kurnool.						
67	18	18	6	33	63	80	66	70	3·4	4·9	-1·5	83	+7	'865	+·071	5·3	-0·6	56	+ 13·3	50·46	36·26	+14·20	5·66	Nellore.						
28	28	63	16	38	45	33	47	57	5·2	4·8	+0·4	79	-3	'822	-·035	4·9	-0·1	58	- 0·5	47·19	40·21	+6·98	7·80	Masulipatam.						
13	36	64	8	10	6	42	78	20	5·9	5·8	+0·1	82	+5	'837	+·047	6·1	+1·5	65	+ 12·5	53·32	38·33	+14·90	9·31	Cocanada.						
37	17	32	4	8	8	46	148	66	7·6	...	...	76	+3	'789	+·048	6·6	+1·5	59	+ 8·8	45·56	37·25	+8·31	3·66	Waitair (Vizagapatam).						
23	62	24	13	3	14	68	77	84	5·9	...	...	82	...	'822	...	3·9	...	70	...	56·81	44·90	+13·31	5·63	Calingapatam.						
8	137	15	4	3	67	81	5	45	7·1	8·6	-1·6	83	+2	'828	+·046	4·1	+1·7	64	+ 7·5	66·25	45·30	+20·95	8·12	Gopalpur.						
17	46	54	19	12	81	135	33	17	...	...	...	80	...	'863	...	4·3	...	68	+ 13·8	45·91	38·76	+7·15	3·60	Bay Islands.						
83	25	39	38	27	21	44	48	40	6·0	5·5	+0·5	82	-3	'878	-·010	5·5	-0·5	158	+ 18·8	92·62	117·07	-24·45	4·00	P. V. Fraser.**						
10	61	39	46	20	36	66	48	39	10·6	...	...	81	-1	'868	+·009	5·1	-1·8	91	- 8·2	43·68	78·41	-34·83	3·20	Port Blair.						
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	Table Island.						
267	1	7	3	13	6	76	2	0	1·5	...	...	63	...	'414	...	3·7	..	88	+ 9·0	64·80	52·25	+12·64	2·72	Muzaffarabad.						
175	14	15	12	55	37	14	8	35	2·1	2·6	-0·5	74	-12	'392†	+·064†	4·8	+0·2	49	- 10·2	22·33	26·47	-4·14	1·81	Srinagar.						
37	10	42	10	9	2	2	2	8	3·0	...	...	76	-3	'414	+·018	4·8	+0·9	31	- 1·7	11·93	15·18	-3·23	1·20	Gulmarg. *						
116	3	7	8	3	1	11	11	12	3·2	...	...	61‡	-3‡	'270‡	-·014‡	4·1	0	52	- 3·8	24·06	31·22	+2·84	2·55	Dras.						

(a) Mean of 11 months.

\* Mean of 10 months.

† Mean of 9 months.

‡ Mean of 5 months.

\*\* Wind observations of 864 days.

†† Wind observations of 122 days.

## (2) Abstract of observations taken at 8 hrs. at 214

Number of sub-division.	STATION.	PRESSURE, 8 HRS., IN INCHES.								TEMPERATURE OF AIR.								
		Height of barometer above sea-level in feet.	Mean 8 hrs. pressure reduced to 32°.	Departure from normal of year.	Mean 8 hrs. pressure reduced to sea-level and to constant gravity at 45° Lat.	Highest pressure of year.	Lowest pressure of year.	Mean of 8 hrs. dry bulb of year.	Mean of 8 hrs. wet bulb of year.	Mean maximum of year.	Departure from normal of year.	Mean minimum of year.	Departure from normal of year.	Yearly mean of mean between maximum and minimum.	Departure from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>Kashmir—concl'd.</b>																		
	Leh . . . . .	11,503	19.715	+·011	19.663	19.903	19.322	36·0	44·3*	62·2†	-0·5†	30·3	+0·6	49·4†	+0·1	25·5*	88·7	-10
	Skardu . . . . .	7,505	22·873	-·008	22·843	23·346	22·535	48·0	41·8†	62·6	+0·3	40·4	0	51·5	+0·1	22·1	100·1	13
	Gilgit . . . . .	4,890	25·184	+·055	25·157	25·895	24·773	56·9	56·15	74·1	+1·5	51·8	-0·8	63·0	+0·3	22·3	106·6	26·7
<b>Baluchistan.</b>																		
15	Fort Sandeman    . . . . .	4,614	25·437	...	25·406	26·637	25·177	48·2	44·7*	69·3	...	49·1	...	58·2	...	26·2	104·9	23·3
	Quetta . . . . .	5,502	24·631	+·008	24·591	24·880	24·343	49·8	52·1†	74·7	+1·1	49·3	-1·0	59·0	+0·1	31·3	102·7	18·3
	Chaman . . . . .	4,311	25·647	-·030	25·609	25·943	25·315	61·7	51·4	78·4	+0·9	54·1	+0·3	65·5	+0·6	33·1	108·2	26·3
	Kalat . . . . .	6,830	23·724	...	23·686	23·939	23·475	46·1	48·6†	74·3	+0·6	40·3	+4·7	56·3	+2·7	32·0	107·7	14·2
	Dalbandin . . . . .	2,772	27·085	...	27·048	27·456	26·920	61·0	51·3	87·5	...	53·3	...	70·4	...	34·2	117·2	23·2
	Pasni . . . . .	39·872	...	29·832	30·256	29·401	71·8	68·2	87·3	...	63·5	...	75·4	...	23·8	108·9	41·9	
	Panjur . . . . .	26·700	...	26·667	27·000	26·384	60·9	58·3	85·6	...	56·4	...	71·0	...	29·2	112·8	27·4	
	Robat ¶ . . . . .	36·987	...	36·925	27·210	26·603	44·1	40·3	84·4	...	30·3	...	47·3	...	34·1	85·6	20·4	
	Seistan (c) . . . . .	28·121	...	...	28·600	27·500	60·4	51·7	83·9	...	56·7	...	69·8	...	26·2	116·2	26·7	
<b>Hill stations, excluding Kashmir and Baluchistan.</b>																		
	Parachinar . . . . .	6,000	24·430	+·018	24·415	24·640	24·137	57·4	50·5**	70·8	+0·8	48·1	+0·1	50·2	+0·1	22·3	100·0	20·8
	Cherat . . . . .	4,256	25·695	+·022	25·683	25·950	25·287	62·1	51·7	71·9	-1·1	56·8**	+2·2*	66·3**	+0·5	15·0**	104·6	31·3
	Drosh (c) . . . . .	25·077	...	...	25·425	24·675	57·2	52·3††	71·5	-1·4	52·6	+1·0	62·1	-0·2	18·8	105·5	26·4	
	Murree . . . . .	6,333	23·903††	-·075††	23·871††	24·181	23·556	54·7	46·8	63·4	-1·7	51·2	+1·0	57·3	-0·3	12·2	98·2	24·8
	Simla . . . . .	7,282	23·093	+·009	23·055	23·278	22·983	53·4	46·7	59·8	-1·1	40·3	-0·4	54·6	-0·7	10·5	90·7	24·5
	Chakrata . . . . .	7,072	23·353	...	23·313	23·548	23·080	55·8	49·6	64·9	+0·7	49·7	+0·1	57·3	+0·4	15·2	86·1	23·8
	Mukteswar . . . . .	7,592	22·863	+·018	.812	23·028	22·594	53·0	47·1	62·6	-1·5	45·9	-2·4	54·3	-1·9	16·9	80·3	23·8
	Darjiling . . . . .	7,432	22·959	+·015	22·914	23·163	22·735	53·8	49·9	61·8	+2·5	48·6	+1·2	55·0	+1·9	12·7	77·8	31·7
	Shillong . . . . .	4,930	25·142	+·027	25·094	25·381	24·845	61·5	56·4	70·5	+0·4	54·0	+0·7	62·8	+0·5	16·8	89·1	31·6
	Cherrapunji . . . . .	4,309	25·665	+·010	25·636	25·936	25·393	63·2	58·5	69·4	+0·9	57·7	+0·6	63·5	+0·7	11·2	81·9	41·1
	Netarhat . . . . .	26·138	...	26·081	26·330	25·918	67·0	60·1	75·7	...	61·1†	...	70·0†	...	18·25	101·2	37·9	
	Maymyo . . . . .	8,546	26·425	0	26·370	26·654	26·165	64·1	61·6	76·8	-0·3	57·9	+1·9	67·4	+0·9	18·8	93·2	37·8
	Pachmarhi . . . . .	8,538	26·429	-·005	26·376	26·891	26·056	68·4	61·4	79·7	-0·1	61·7	+0·7	70·7	+0·8	18·1	103·0	37·1
	Mount Abu . . . . .	3,945	26·033	+·006	25·983	26·264	25·708	67·5	57·1	74·9	-1·0	61·8	-0·2	68·4	-0·6	18·1	95·0	40·9
	Mereara . . . . .	3,761	26·228	-·005	26·161	26·385	26·076	65·5	63·1	77·0	+0·4	60·7	-0·6	69·8	-0·1	16·3	91·0	37·6
	Ootacamund . . . . .	7,327	23·073	+·023	23·009	23·198	22·934	56·3	58·1	66·8	+1·3	49·7	+0·6	58·3	+0·9	17·1	77·4	37·7
	Kodaikanal . . . . .	7,688	22·887	+·004	22·771	22·958	22·678	57·6	59·1	65·6	+0·9	51·1	0	58·3	+0·6	16·6	76·7	37·6
<b>Extra India.</b>																		
	Singapore (a) . . . . .	10	29·865	-·070	29·795	29·997	29·747	83·4	...	88·4	+0·6	75·1	+1·3	81·7	+0·9	15·3	83·5	71·5
	Penang (a) . . . . .	17	29·841	-·074	29·783	29·952	29·742	82·7	...	90·9	+1·6	73·5	-1·3	81·7	+0·1	18·4	95·0	69·0
	Trincomalee . . . . .	99	29·818	+·011	29·846	30·005	29·584	70·0	74·9	90·2	+1·6	78·6	+0·8	83·4	+0·9	19·5	90·3	70·0

N. B.—Elevations in italics indicate barometrical determinations.

Note.—The barometric readings are not reduced to sea-level, in the case of hill or plateau-stations, the elevations of which exceed 8,000 feet.

(a) Aneroid.

(a) 9 hrs. observations.

\* Mean of 5 months.

† Mean of 7 months.

‡ Mean of 8 months.

§ Mean of 9 months.

|| Mean of 10 months.

\*\* Mean of 11 months.

b class stations in India, etc., in the year 1919.

WIND VELOCITY. miles per hour.	HYGROMETRY, 8 HRS.			CLOUD.			RAINFALL.			Station.					
	Normal.	Departure from normal.	Mean humidity at 8 hrs. of year.	Departure from normal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from normal of year.	Mean cloud amount at 8 hrs. of year.	Departure from normal of year.	Number of rainy days during year.	Departure from normal of year.	Rainfall for the year.	Normal rainfall for the year.	Departure from normal of year.	Heaviest rainfall during year.	
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
83	-10	.665	-.012						112	-8.5	66.03	94.12	-8.09	3.00	Bishnath.
88	+1	.783	+.100						107	-6.5	86.01	85.98	+0.03	4.50	Borjuli.
91	0	.712	-.002						102	-29.6	72.40	110.16	-37.76	3.00	Chandkhira.
89	-4	.656	-.012						121	-9.9	96.33	99.00	-3.00	4.84	Doom Dooma.
87	-4	.658	+.005						117	-18.4	103.55	104.58	-1.03	5.20	Dikom.
90	0	.682	-.003						104	-9.2	65.37	69.05	-3.68	4.61	Golaghat.
87	-4	.714	+.022						108	-27.6	81.24	124.34	-43.10	4.65	Hailakandi.
88	-2	.682	-.005						122	+1.6	95.40	83.56	+11.98	3.76	Jorehat.
88	..	.701	...						75	-4.7	41.55	50.74	-9.10	4.56	Lumding.
77	-4	.751	+.051						103	-12.3	69.93	82.27	-12.34	3.80	Messa.
90	-1	.665	+.062						107	+4.0	97.15	81.54	+15.61	4.98	Panerihat.
77	-17	.730	-.027						95	-6.5	78.80	90.87	-12.07	5.67	Comilla.
73	-9	.768	+.025						83	-10.9	67.10	86.79	-29.69	3.75	Brahmanbaria.
80	-1	.739	-.002						100	+8.1	72.20	70.53	+1.67	7.67	Faridpur.
									101	+11.7	65.69	66.04	-0.35	3.72	Goalundo.
									93	+9.5	55.75	59.70	-3.95	4.28	Pabna.
									86	+3.5	62.26	64.27	-2.01	4.00	Sirajganj.
									88	+11.7	58.73	54.92	+3.81	3.52	Rampur Boalia.
									79	+11.1	77.16	52.88	+24.33	6.38	Malda.
									89	+5.9	68.27	80.75	-12.48	4.60	Rangpur.
									115	-7.8	137.55	153.08	-15.53	6.70	Dam Dim.
									116	-3.5	151.03	146.67	+4.36	9.42	Kalchini.
									118	-14.3	142.28	156.81	-14.58	5.21	Nagrakata.
									101	-2.9	129.71	143.51	-13.80	5.90	Cooch Behar.
									83	+5.4	58.83	57.96	+0.87	5.05	Krishnagar.
									86	+12.0	88.37	55.11	+33.26	5.05	Bankura.
									81	+7.8	58.31	52.97	+5.94	3.52	Kaniganj (Asansol).
									95	+20.5	86.25	52.59	+13.06	2.90	Hazaribagh.
									70	+10.1	46.98	40.24	-2.26	4.10	Bhagalpur.
									52	-4.8	29.59	40.55	-20.96	2.99	Muzaffarpur.
									57	-1.8	41.84	55.57	-13.73	9.22	Motihari.
									58	+3.1	51.24	42.90	+8.94	5.65	Chapra.
									73	+17.2	63.56	44.95	+18.61	4.70	Arrah.
									65	+11.1	55.11	42.01	+13.10	3.49	Dehri.

see  
last  
page

## ANNUAL SUMMARY, 1919.

TABLE

*Abstract of observations taken at 8 hrs. at 61 fourth and*

Number of sub-division.	Station,	TEMPERATURE OF AIR.											WIND DIRECTION.									
		Mean of 8 hrs. dry bulb of year.	Mean of 8 hrs. wet bulb of year.	Mean maximum of year.	Departure from normal of year.	Mean minimum of year.	Departure from normal of year.	Yearly mean of mean between maximum and minimum.	Departure from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.	Number of winds from	Calm.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
V.—United Provinces of Agra and Oudh.																						
10 Meerut . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dehra Dun . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
IX.—Rajputana.																						
18 Udaipur . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
XII.—Central Provinces.																						
23 Chhindwara . . . . .	71·1	64·0	86·0	...	...	64·4	...	75·2	...	21·6	110·2	42·4	197	15	19	7	5	3	26	46	46	46
XIII.—Hyderabad.																						
27 Parbhani . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
XV.—Madras.																						
31 Tirunelvelly . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32 Anantapur . . . . .	78·2	74·4	93·6*	...	...	72·5	...	83·0*	...	21·0*	107·0	56·4	...	...	...	...	...	...	...	...	...	...
33 Guntur . . . . .	80·3	75·4	93·5	...	...	74·9	...	84·2	...	18·6	113·0	60·0	...	...	...	...	...	...	...	...	...	...
Koraput* . . . . .	69·8	65·8	82·4	...	...	64·2	...	73·3	...	18·2	98·9	41·8	...	...	...	...	...	...	...	...	...	...
Bay Islands.																						
1 Car Nicobar . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kashmir.																						
19 Jammu . . . . .	70·8	62·0	84·5	...	65·7	...	75·1	...	18·8	112·3	41·1	0	139	141	29	11	9	8	10	10	10	
Sonamarg . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kargil . . . . .	41·9	47·2†	60·0	...	23·9	...	41·9	...	30·1	98·8	-27·0	70	3	0	1	81	14	24	8	10	10	
Baluchistan.																						
15 Harnai . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill stations, exclusive of Kashmir.																						
Panighatta . . . . .	71·3	65·7	84·8	+1·0	65·7	+0·7	75·1	+0·9	18·8	98·3	48·9	...	...	...	...	...	...	...	...	...	...	...
Kurseong . . . . .	64·8	63·6	70·1	+2·1	57·5	+0·8	63·8	+1·5	12·6	81·3	40·0	...	...	...	...	...	...	...	...	...	...	...
Gnatong . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lachung . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dharampur . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ringim . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mussooree . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Poo . . . . .	...	...	...	...	61·8	+1·0	40·4	-0·2	51·1	+0·4	21·3	91·3	8·8	75	21	31	40	39	31	77	31	31
Kallang . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pishin . . . . .	...	...	...	...	...	76·0	-0·5	39·4	-2·8	57·7	-1·7	86·6	103·9	11·0	...	...	...	...	...	...	...	...

\* Mean of 11 months.  
† " " 7 "

-- contd.

*fifth class stations in India, etc., in the year 1919—contd.*

WIND VELOCITY.		HYGROMETRY, 8 HRS.				CLOUD.		RAINFALL.				Station.			
Mean velocity in miles per hour.	Normal.	Departure from nor- mal.	Mean humidity at 8 hrs. of year.	Departure from nor- mal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from nor- mal of year.	Mean cloud amount at 8 hrs. of year.	Departure from nor- mal of year.	Number of rainy days during year.	Departure from nor- mal of year.	Rainfall for the year.	Normal rainfall for the year.	Departure from nor- mal of year.	Highest rainfall during year.	
28	29	25	26	27	28	29	30	31	32	33	34	35	36	37	38
8.6	...	...	69	...	529	...	41	...	78	+ 18.7	56.96	40.71	+ 16.25	3.02	V.—United Provinces of Agra and Oudh.
...	...	...	84	...	811	...	5.0	...	48	- 3.4	37.55	32.57	- 5.02	3.25	Meerut.
...	...	...	80	...	830	...	1.5	...	37	- 4.1	22.44	28.56	- 8.12	4.08	Delhi Dun.
...	...	...	82	...	598	...	...	...	52	+ 13.9	38.50	24.06	+ 14.44	4.58	Udaipur.
...	...	...	...	...	...	...	...	...	56	+ 1.6	36.12	33.20	+ 2.92	2.88	Chhindwara.
...	...	...	...	...	...	...	...	...	87	...	70.12	...	...	5.20	XII.—Central Provinces.
...	...	...	...	...	...	...	...	...	120	+ 9.5	80.75	98.64	- 17.89	3.49	Guntur.
...	...	...	...	...	...	...	...	...	60	- 4.6	58.44	42.60	+ 15.84	3.78	Koraput.
...	...	...	61	...	495	...	2.9	...	98	- 8.7	62.14	73.55	- 11.41	4.70	Tirunelvelly.
...	...	...	42*	...	217*	...	3.3	...	20	- 1.9	7.49	8.93	- 1.44	1.08	Anantapur.
...	...	...	...	...	...	...	...	...	19	- 4.7	13.52	12.25	+ 1.27	2.60	Guntur.
...	...	...	...	...	...	...	...	...	110	- 11.7	137.17	139.57	- 2.40	8.21	Kargil.
...	...	...	73	+ 2	582	- 018	...	...	124	- 11.6	162.33	181.92	+ 0.41	7.06	Panighatta.
...	...	...	98	+ 13	584	+ 142	...	...	192	+ 2.4	176.63	168.46	+ 8.17	8.15	Kurseong.
...	...	...	...	...	...	...	...	...	163	+ 18.6	61.21	64.68	- 3.42	1.58	Gnatong.
...	...	...	...	...	...	...	...	...	75	...	57.14	...	...	5.00	Lachung.
...	...	...	...	...	...	...	...	...	59	+ 1.5	30.38	58.06	- 27.73	3.61	Dharampur.
...	...	...	...	...	...	...	...	...	101	+ 12.4	110.99	94.30	+ 16.69	4.48	Ringim. <sup>t</sup>
...	...	...	...	...	...	...	...	...	36	+ 2.7	17.30	14.10	+ 3.20	3.10	Mussoorie.
...	...	...	...	...	...	...	...	...	51	+ 3.3	20.89	22.74	- 1.85	2.63	Poo.
...	...	...	...	...	...	...	...	...	16	- 4.2	6.62	8.83	- 2.21	0.85	Kailang. <sup>t</sup>
...	...	...	...	...	...	...	...	...	...	...	...	...	...	Fishin <sup>t</sup>	

\* Mean of 7 months.  
 ↑ Rainfall for 11 months.  
 ↓ " 3 "

† Rainfall for 11 months.  
‡ " 8 "

• 8 •

§ Mean of 11 months.

*Abstract of observations taken at 8 hrs. at 61 fourth and*

Number of sub-division.	Station.	TEMPERATURE OF AIR.												WIND DIRECTION.								
		Mean of 8 hrs. dry-bulb of year.	Mean of 8 hrs. wet bulb of year.	Mean maximum of year.	Departure from normal of year.	Mean minimum of year.	Departure from normal of year.	Yearly mean of mean between maximum and minimum.	Departure from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.	Calm.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
<b>Extra India.</b>																						
Chambi*	.	42.8	46.3†	56.4	..	36.9	..	46.7	..	19.5	76.4	13.2	...	...	...	...	...	...	...	...	...	...
Pemba	.	...	...	...	..	..	..	...	..	...	...	...	5	235	1	1	2	68	3	15	22	2
Abadan	.	79.2	64.8	92.7	..	67.1	..	79.9	..	25.6	120.0	41.0	5	235	1	1	2	68	3	15	22	2

\* Mean of 11 months.

† " 9 "

—concl'd.

*7th class stations in India, etc., in the year 1919—concl'd.*

WIND VELOCITY.			HYGROMETRY, 8 HRS.				CLOUD.		RAINFALL.				Station.		
Mean Velocity in miles per hour.	Normal.	Departure from nor- mal.	Mean humidity at 8 hrs. of year.	Departure from nor- mal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from nor- mal of year.	Mean cloud amount at 8 hrs. of year.	Departure from nor- mal of year.	Number of rainy days during year.	Departure from nor- mal of year.	Rainfall for the year.	Normal rainfall for the year.	Departure from nor- mal of year.	Heaviest rainfall during year.	
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
..	..	..	91*	..	*329*	..	2*0	..	50	-36*5	50*10	34*18	+15*92	6*45	Chumbi.
..	..	..	40	..	*442	..	..	..	74	- 5*4	60*18	63*03	+ 6*15	3*90	Pemba.†
..	..	..	..	..	..	..	..	..	11	..	5*94	..	..	1*10	Abadan.‡

\* Mean of 8 months.

† Rainfall for 9 months.

‡ Wind observations for 352 days.

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B—contd.

stations in India, etc., in the year 1919.

WIND DIRECTION.										WIND VELOCITY.			HYGROMETRY, 8 HRS.			CLOUD.		RAINFALL.					STATION.		
Number of winds from										Mean Velocity in miles per hour of year.	Normal Velocity of year.	Departure from nor- mal of year.	Mean humidity at 8 hrs. of year.	Departure from nor- mal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from nor- mal of year.	Mean cloud amount at 8 hrs. of year.	Departure from nor- mal of year.	Number of rainy days during year.	Departure from nor- mal of year.	Rainfall of year.	Normal rainfall of year.	Departure from nor- mal of year.	Heaviest rainfall during year.	
Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
20	21	22	23	24	25	26	27	28																	
885	5	19	9	8	32	6	1	0	1.8	1.5	+0.3	40*	-3*	-204*	-004*	4.2	-0.6	8	-1.7	3.08	3.21	-0.13	0.50	Kashmir—concl.	
171	2	15	48	14	13	49	51	2	4.0	...	...	45†	-11†	-25†	-038†	4.2	-0.6	15	-4.8	4.92	7.66	-2.74	0.49	Leh.	
320	1	0	0	1	1	33	0	9	0.3	...	...	58†	+ 8†	+ 411†	+ 140†	3.4	-1.5	15	-0.4	6.70	4.91	+ 1.70	1.04	Skardu.	
																							Gilgit.		
																								Baluchistan.	
114	2	9	14	13	10	10	9	0	3.2	...	...	57*	...	-222*	...	1.8	...	16	+ 0.7	6.20	5.62	+ 0.67	2.60	Fort Sandeman.	
300	2	3	7	21	19	5	4	4	1.9	2.1	-0.2	585	+ 75	-3195	+ 0405	2.0	+ 0.1	17	-7.5	6.35	10.02	-3.67	0.77	Quctta.	
116	2	2	85	69	63	25	0	2	3.8	5.9	-2.1	51	...	-286	+ 027	2.1	+ 0.2	16	-3.2	4.28	7.12	-2.84	0.54	Chaman.	
251	0	4	4	7	36	31	1	5	4.0	...	...	60†	+ 15†	-302†	+ 011†	1.9	...	16	-2.6	5.42	6.98	-1.54	0.73	Kalat.	
188	24	56	20	13	8	27	23	6	4.1	...	...	51	...	-278	...	1.7	...	10	...	2.69	3.77	-1.08	0.91	Dalbandin.	
65	41	11	27	10	7	13	84	107	4.8	...	...	83	...	-670	...	3.9	...	7	...	9.00	7.39	+ 2.30	4.47	Pasni.	
130	8	104	84	4	6	14	7	8	4.6	...	...	58	...	-361	...	1.6	...	9	...	3.78	...	...	0.88	Panjgur.	
10	0	0	1	2	0	23	22	0	3.1	...	...	59	...	-185	...	2.0	...	2	-1.5	6.75	1.44	-0.69	0.57	Robat.	
168	8	1	1	1	0	0	0	188	8.3	...	...	56	...	-298	...	1.1	...	5	...	1.67	...	...	0.55	Seistan.	
																								Hill stations, exclud- ing Kashmir and Baluchistan.	
364	0	1	0	0	0	0	0	0	0.5	...	...	54	-1	-295	+ 018	2.7	-0.7	74	+ 9.4	37.71	29.69	+ 8.02	2.10	Parachinar.	
98	130	5	2	18	45	2	9	47	8.1	8.3	-2.2	60	-3	-299	-017	3.1	+ 0.1	42	0	28.57	28.00	+ 0.57	2.78	Cherat.**	
322	0	11	25	3	0	4	0	0	2.6	...	...	53†	-7†	-318;†	+ 021††	2.0	0	40	-0.3	23.25	16.76	+ 6.49	2.60	Drosh.	
130	54	30	18	83	27	4	8	11	4.0	5.3	-1.3	55	-1	-258	-011	3.4	-0.2	78	+ 0.9	74.60	59.00	+ 15.60	5.78	Murree.	
...	...	...	...	...	...	...	...	...	...	...	...	60	+ 3	-272	+ 016	4.5	+ 0.4	101	+ 15.0	71.09	63.07	+ 8.02	4.25	Simla.	
99	6	107	38	0	0	97	12	6	6.4	4.6	+ 1.8	64	0	-309	+ 021	4.6	+ 1.2	95	+ 6.2	76.84	73.01	+ 3.83	5.74	Chakrata.	
75	12	25	06	46	13	11	108	10	5.3	...	...	64	+ 3	-279	+ 007	4.7	+ 0.6	91	+ 10.7	55.36	52.34	+ 3.02	3.40	Mukteswar.	
245	18	16	20	17	4	16	19	10	2.2	3.5	-1.3	83	-2	-349	-004	6.7	+ 0.9	120	+ 3.6	131.17	125.44	+ 6.73	5.04	Darjiling.	
244	0	7	23	9	31	46	5	1	2.0	...	...	73	-1	-416	+ 004	4.6	+ 0.3	110	-14.5	59.99	58.05	-20.06	5.19	Shillong.	
80	16	55	40	28	38	66	37	5	4.5	...	...	76	-5	-453	-016	5.4	0	154	-6.2	372.92	424.02	-51.10	23.35	Cherrapunji.	
5	29	27	10	18	16	62	93	105	3.9	...	...	65	...	-452	...	3.1	...	90	...	97.09	...	...	5.86	Netarhat.	
353	2	5	1	2	11	70	21	1	1.2	...	...	88	+ 4	-635	-004	4.5	+ 0.5	90	-1.6	55.15	60.20	-5.05	2.58	Maymyo.	
103	4	12	25	32	21	29	92	47	3.3	4.3	-1.0	70	+ 10	-476	+ 046	3.5	-0.2	110	+ 33.3	101.13	75.75	+ 25.98	4.85	Pachmarhi.	
78	81	35	12	17	13	116	35	29	5.6	5.7	-0.1	55	+ 1	-388	+ 001	3.9	+ 0.6	56	+ 3.2	91.86	58.19	+ 33.67	12.53	Mount Abu.	
85	29	55	44	5	3	47	67	30	3.5	4.3	-0.8	87	+ 2	-547	+ 005	5.8	-0.5	140	+ 8.3	123.75	126.47	-2.72	6.36	Mercara.	
77	3	13	65	70	30	17	56	34	3.8	...	...	73	+ 5	-352	+ 028	6.0	+ 1.0	118	+ 10.6	61.36	56.46	+ 4.00	4.80	Ootacamund.	
5	51	48	45	43	18	9	78	68	8.2	...	...	71	+ 2	-335	+ 013	4.9	+ 0.3	112	+ 4.4	65.06	62.10	+ 2.87	2.81	Kodaikanal.	
																							Extra India.		
97	20	76	10	54	10	48	8	42	...	...	...	...	...	...	...	6.7	+ 1.5	128	-3.1	98.01	96.13	-3.12	3.87	Singapore.	
0	70	187	13	54	11	4	1	25	...	...	...	...	...	...	...	...	...	144	+ 14.9	92.68	102.63	-9.95	5.79	Penang.	
71	13	80	15	4	8	155	65	5	5.7	7.3	-1.6	82	-2	-811	-048	5.5	+ 2.3	62	+ 9.2	74.91	69.15	+ 12.76	7.01	Trincomalee.	

\* Mean of 5 months.

† " " 7 "

‡ " " 0 "

§ " " 8 "

|| " " 11 "

|| " " 10 "

\*\* Wind observations of 356 days.

See

## ANNUAL SUMMARY, 1919.

## TABLE

(2) Abstract of observations taken at 8 hrs. at 214

Number of sub-division.	STATION.	Height of bar-dictum above sea-level in feet.	PRESSURE, 8 HRS., IN INCHES.							TEMPERATURE OF AIR.								
			Mean 8 hrs. pressure reduced to 32°.	Departure from normal of year.	Mean 8 hrs. pressure reduced to sea-level constant gravity at 45° Lat.	Highest pressure of year.	Lowest pressure of year.	Mean of 8 hrs. dry bulb of year.	Mean maximum of year.	Departure from normal of year.	Mean minimum of year.	Departure from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Extra India—concl.																		
Colombo	.	24	29.917	0	29.867	30.071	29.751	76.7	74.6	86.9	-0.3	75.2	-0.3	81.0	-0.3	11.7	98.6	65.9
Hambantota	.	64	29.871	...	29.861	30.025	29.679	76.2	73.9	86.8	...	75.3	...	81.1	...	11.6	96.7	64.3
Minicoy	.	7	29.966	+0.027	...	30.091	29.817	...	...	...	...	...	...	...	...	...	...	...
Amini Divi	.	13	29.924	-0.005	29.865	30.085	29.733	83.3	77.1	86.9	+2.0	77.5	+0.5	83.2	+1.3	11.4	96.6	68.9
Gangtok	.	5,667	24.291	-0.78	24.246	24.526	24.029	57.3	54.3	68.1	-0.1	65.5*	+8.7*	62.3	+4.2*	13.3	81.1	39.8
Kashgar (c)	.	4,255	25.620	-1.00	...	26.250	25.040	51.1	54.0†	68.9	+2.3	42.7	-0.2	55.8	+1.1	26.2	104.8	4.8
Kabul (c)†	.	...	24.056	-1.151	...	24.400	23.790	57.6	56.6†	84.4	+4.2	53.9	+2.4	69.2	+3.3	30.5	105.8	8.0
Jask	.	13	29.854	-0.006	29.820	30.276	29.374	76.1	71.2	87.2	+0.8	71.7	-1.9	79.5	-0.5	15.4	105.1	53.4
Muscat	.	20	29.876	+0.019	29.844	30.248	29.426	80.6	73.0	88.3	+3.2	77.2	-1.2	82.7	+1.0	11.0	109.3	61.7
Bushire	.	14	29.852	-0.015	29.823	30.266	29.328	73.8	67.5	82.1	0	69.3	+0.7	75.8	+0.3	12.7	100.2	47.8
Busrah (a)	.	25	30.125	-0.035	30.119	30.308	29.834	53.5	52.0	66.3	+3.7	47.5	+1.1	56.9	+2.4	18.9	80.1	37.1
Ispahan (c)	.	5,817	24.242	-0.072	...	24.490	23.820	53.2	48.3	75.4	+1.6	48.3	+2.7	61.9	+2.1	27.1	103.4	21.2
Tehran (c)	.	4,002	25.716	-1.145	...	26.080	25.310	59.8	61.3	74.5	-1.2	52.8	+2.6	63.6	+1.9	31.7	103.6	23.6
Baghdad	.	127	29.781	-0.010	...	30.246	29.310	65.6	55.5	86.1	+0.1	62.6	+2.5	74.3	+1.3	23.5	118.7	37.4
Aden	.	94	29.821	-0.008	29.848	30.040	29.500	80.1	74.5	87.8	-0.7	78.1	+0.1	82.7	-0.8	9.3	108.8	69.1
Zanzibar	.	72	30.007	+0.014	30.005	30.167	29.858	79.2	75.1	84.5	+0.7	76.9	+0.5	80.7	+0.6	7.6	92.2	70.2

N.B.—Elevations in italics indicate barometrical determinations.

Note.—The barometric readings are not reduced to sea-level in the case of hill or plateau stations, the elevations of which exceed 2,300 feet.  
(c) Aneroid.

(a) Mean of 2 months.

\* Mean of 11 months.

† Mean of 8 months.

‡ Mean of 7 months.

§ Mean of 6 months.

|| Mean of 10 months.

## B—concl'd.

stations in India, etc., in the year 1919.

WIND DIRECTION.										WIND VELOCITY.			HYGROMETRY, 8 HRS.				CLOUD.			RAINFALL.				STATION.									
Number of winds from										Mean velocity in miles per hour of year.			Normal velocity of year.	Departure from normal of year.	Mean humidity at 8 hrs. of year.	Departure from normal of year.	Mean vapour tension at 8 hrs. in inches of mercury of year.	Departure from normal of year.	Mean cloud amount at 8 hrs. of year.	Departure from normal of year.	Number of rainy days during year.	Departure from normal of year.	Rainfall of year.	Normal rainfall of year.	Departure from normal of year.	Heaviest rainfall during year.							
Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
207	12	23	8	3	10	72	27	3	3'3	5'8	-2'5	91	+ 9	'829	-0'025	7'2	+1'9	131	+20'8	92'43	84'57	+7'88	4'80	Colombo.	Extra India —concl'd.								
28	89	36	0	2	0	40	125	50	6'9	...	...	89	...	'805	...	6'1	...	63	...	29'21	37'94	- 8'73	1'87	Hambantota.									
73	61	36	11	11	7	36	85	45	4'7	6'9	-2'2	...	...	...	...	4'1	-0'5	112	+19'5	74'84	62'84	+12'00	4'23	Minicoy.									
8	83	53	12	2	2	29	77	99	8'0	...	...	75	- 2	'847	-0'013	5'3	-0'1	88	+12'0	88'06	53'67	+34'49	8'15	Amini Divi.									
256	11	40	13	12	12	3	6	5	1'3*	...	...	83	+ 1	'412	-0'005	5'4	+1'5	169	+3'0	140'00	136'43	+ 3'67	5'40	Gangtok.††									
324	11	1	4	0	1	0	12	11	1'2	2'1	-0'0	48†	- 2†	'322†	+0'017†	4'0	+0'5	4	- 4'4	3'33	3'18	+ 0'15	2'00	Kashgar.§									
0	14	4	6	19	21	65	51	16	...	...	...	67	+16	'406	+0'045	3'7	+1'7	10	- 2'8	3'79	6'17	- 2'33	1'20	Kabul.†									
35	65	82	143	12	3	3	21	51	8'3	8'7	-0'4	78	+ 6	'729	-0'005	1'8	-0'1	10	+ 1'1	7'69	4'20	+ 3'49	2'22	Jask.									
185	4	7	18	64	3	2	9	93	3'0	3'1	-0'1	69	+ 1	'730	-0'001	1'8	-0'1	8	- 0'8	2'67	4'16	- 1'40	0'86	Muscat.—									
54	59	63	26	20	9	7	31	96	7'8	5'8	+2'0	72	+ 3	'625	+0'006	2'4	+0'3	18	- 0'2	7'14	10'85	- 3'71	1'15	Bushire.									
8	5	3	7	4	4	5	16	7	8'1	...	...	90	...	'375	...	3'9	...	5	- 0'6	3'15	2'19	+ 0'96	1'42	Busrah.									
318	3	0	0	0	1	11	20	5	1'5	2'9	-1'4	51	- 8	'260	-0'067	1'5	-0'5	7	- 6'7	2'49	4'64	- 2'15	1'00	Ispahan.**									
192	32	55	6	8	23	30	11	3	3'3	2'2	+1'1	50	+ 2	'309	+0'030	2'6	+0'1	22	- 5'0	7'86	9'30	- 1'44	1'65	Tehran.††									
30	56	24	21	24	16	16	115	63	7'2	2'7	+4'5	55	- 3	'323	-0'067	2'5	+0'9	18	+ 1'7	10'11	6'89	+ 3'22	1'70	Baghdad.									
91	16	183	35	17	6	12	1	4	9'0	9'1	-0'1	77	+ 3	'790	-0'008	5'1	+1'1	2	- 1'8	0'58	2'10	- 1'52	0'45	Aden. —									
65	38	46	4	23	74	96	19	0	4'6	4'9	-0'3	82	- 1	'815	0	0'3	+0'1	77	-10'3	47'90	61'52	-13'62	3'61	Zanzibar.									

\* Mean of 11 months.

† Wind observations for 196 days.

‡ Mean of 8 months.

§ Wind observations for 364 days.

|| Mean of 3 months.

\*\* Wind observations for 358 days.

†† Mean of 10 months.

‡‡ Wind observations for 360 days.

§§ Mean of 9 months.

||| " " 6 "

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**Table C.—Abstract of observations taken at 8 hrs. at 61  
fourth and fifth class stations in India, etc., in the  
year 1919.**

---

TABLE

Abstract of observations taken at 8 hrs. at 61 fourth and

Number of sub-division.	Station.	TEMPERATURE OF AIR.												WIND DIRECTION.								Number of winds from												
		Mean of 8 hrs. dry bulb of year.			Mean of 8 hrs. wet bulb of year.			Mean maximum of year.			Departure from normal of year.			Mean minimum of year.			Departure from normal of year.			Yearly mean of mean between maximum and minimum.			Departure from normal of year.			Mean daily range of temperature.			Highest temperature observed during year.			Lowest temperature observed during year.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Calm.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.		
<b>II.—Assam.</b>																																		
4	Bishnath	.	.	.	.	.	71·1	67·7	85·3	+1·9	65·1	+3·9	75·2	+2·9	20·3	98·9	38·9	...	...	...	...	...	...	...	...	...	...	...	...					
	Borjali	.	.	.	.	.	74·7	72·2	86·2	+1·3	64·0	+0·6	75·1	+0·9	22·2	96·2	40·4	...	...	...	...	...	...	...	...	...	...	...	...					
	Chandkhira	.	.	.	.	.	70·0	68·9	90·2	+3·9	62·4	-2·1	76·3	+0·9	27·8	103·6	39·1	...	...	...	...	...	...	...	...	...	...	...	...					
	Doom Dooma	.	.	.	.	.	68·7	66·5	86·0	+6·3	64·3	+1·7	75·1	+4·0	21·8	102·8	41·0	...	...	...	...	...	...	...	...	...	...	...	...					
	Dikom	.	.	.	.	.	69·7	67·0	84·5	+2·3	63·9	+0·7	74·2	+1·5	20·6	100·8	38·6	...	...	...	...	...	...	...	...	...	...	...	...					
	Golaghat	.	.	.	.	.	70·4	68·3	88·7	+2·1	63·0	...	73·3	...	20·7	97·9	38·6	...	...	...	...	...	...	...	...	...	...	...	...					
	Hailakandi	.	.	.	.	.	72·5	69·7	87·4	+1·5	66·7a	+2·8a	78·4a	+2·1a	19·5a	98·8	47·2	...	...	...	...	...	...	...	...	...	...	...	...					
	Jorehat	.	.	.	.	.	70·3	68·0	84·0	+1·0	65·3	+0·2	74·7	+0·6	18·7	97·3	41·3	...	...	...	...	...	...	...	...	...	...	...	...					
	Lumding (a)	.	.	.	.	.	73·8	69·0	87·2	...	65·7	...	76·5	...	21·6	98·9	41·0	...	...	...	...	...	...	...	...	...	...	...	...					
	Messa	.	.	.	.	.	77·6	72·4	88·7	+0·5	63·7	+1·2	76·2	+0·9	25·1	100·0	39·8	...	...	...	...	...	...	...	...	...	...	...	...					
	Panerihat	.	.	.	.	.	69·8	67·0	85·6	+2·5	60·3	-2·2	72·9	+0·1	25·3	99·1	38·6	...	...	...	...	...	...	...	...	...	...	...	...					
<b>III.—Bengal.</b>																																		
5	Comilla	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Brahmanbaria	.	.	.	.	.	76·8	71·6	80·2	+2·8	67·6	-0·4	78·4	+1·2	21·6	98·6	48·0	...	...	...	...	...	...	...	...	...	...	...	...					
	Faridpur	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Goalundo	.	.	.	.	.	79·8	73·6	87·9	+1·1	67·6	+0·6	77·7	+0·9	20·3	104·3	41·3	...	...	...	...	...	...	...	...	...	...	...	...					
	Pabna	.	.	.	.	.	75·7	71·3	88·4	-1·5	67·6	+1·2	78·0	-0·1	20·7	104·3	47·2	...	...	...	...	...	...	...	...	...	...	...	...					
	Sirajganj	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Rampur Boalia	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Malda	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Rangpur	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Dam Dim	.	.	.	.	.	68·3	66·5	88·5	+0·6	61·6	+0·3	75·0	+0·5	26·9	98·9	38·0	...	...	...	...	...	...	...	...	...	...	...	...					
	Kalchini	.	.	.	.	.	74·5	70·2	86·1	+1·4	61·9	-0·8	74·0	+0·3	24·1	97·6	39·0	...	...	...	...	...	...	...	...	...	...	...	...					
	Nagrakata	.	.	.	.	.	76·4	69·0	85·6	+0·9	64·3	-0·5	75·0	+0·2	21·3	96·1	48·0	...	...	...	...	...	...	...	...	...	...	...	...					
	Cooch Behar	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Krishnagar	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Bankura	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Kaniganj (Asansol)	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
<b>IV.—Bihar and Orissa.</b>																																		
7	Hazaribagh	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
8	Bhagalpur	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Muzaffarpur	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Motihari	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Chapra	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Arrah	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
	Dehri	.	.	.	.	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						

\* Mean of 11 months.

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George C. Simpson.

Sir John Eliot.

Ditto.

Ditto.

Ditto.

W. L. Dallas.

Sir John Eliot.

W. G. Wilson.

Sir John Eliot.

Ditto.

Henry F. Blanford.

Sir John Eliot.

W. L. Dallas.

Sir John Eliot.

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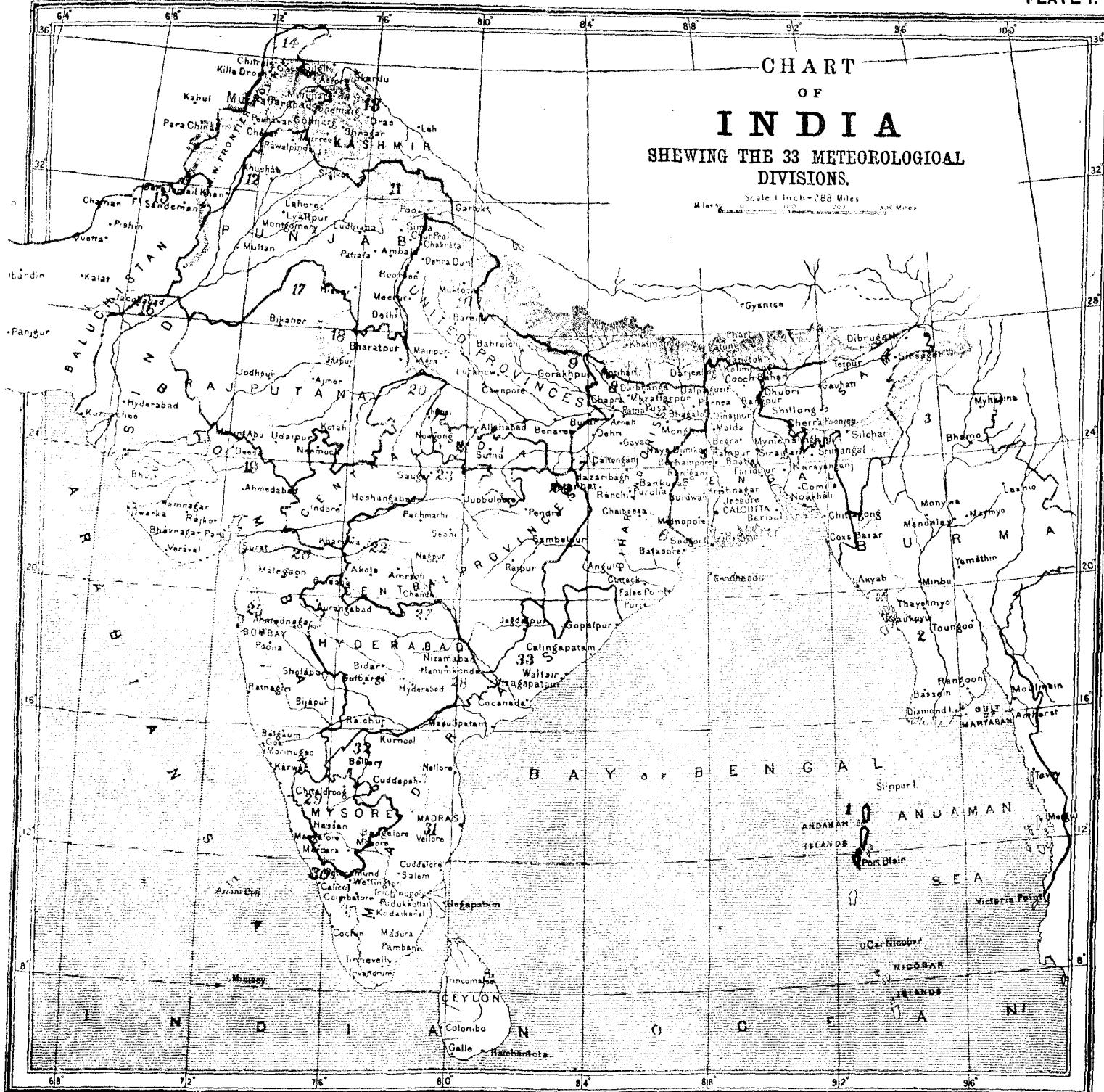
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† Copies for May and July, 1902, are out of print.



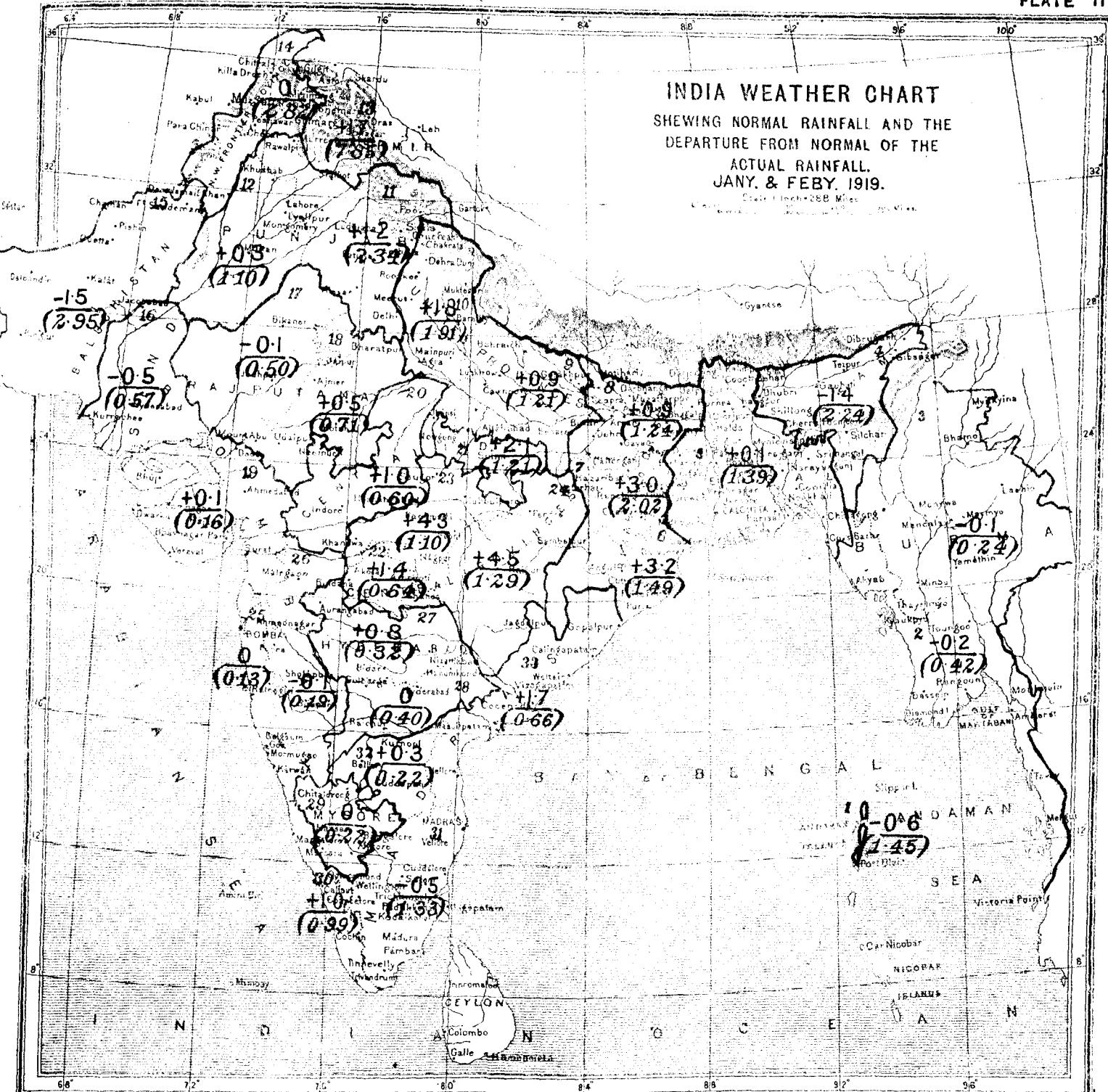






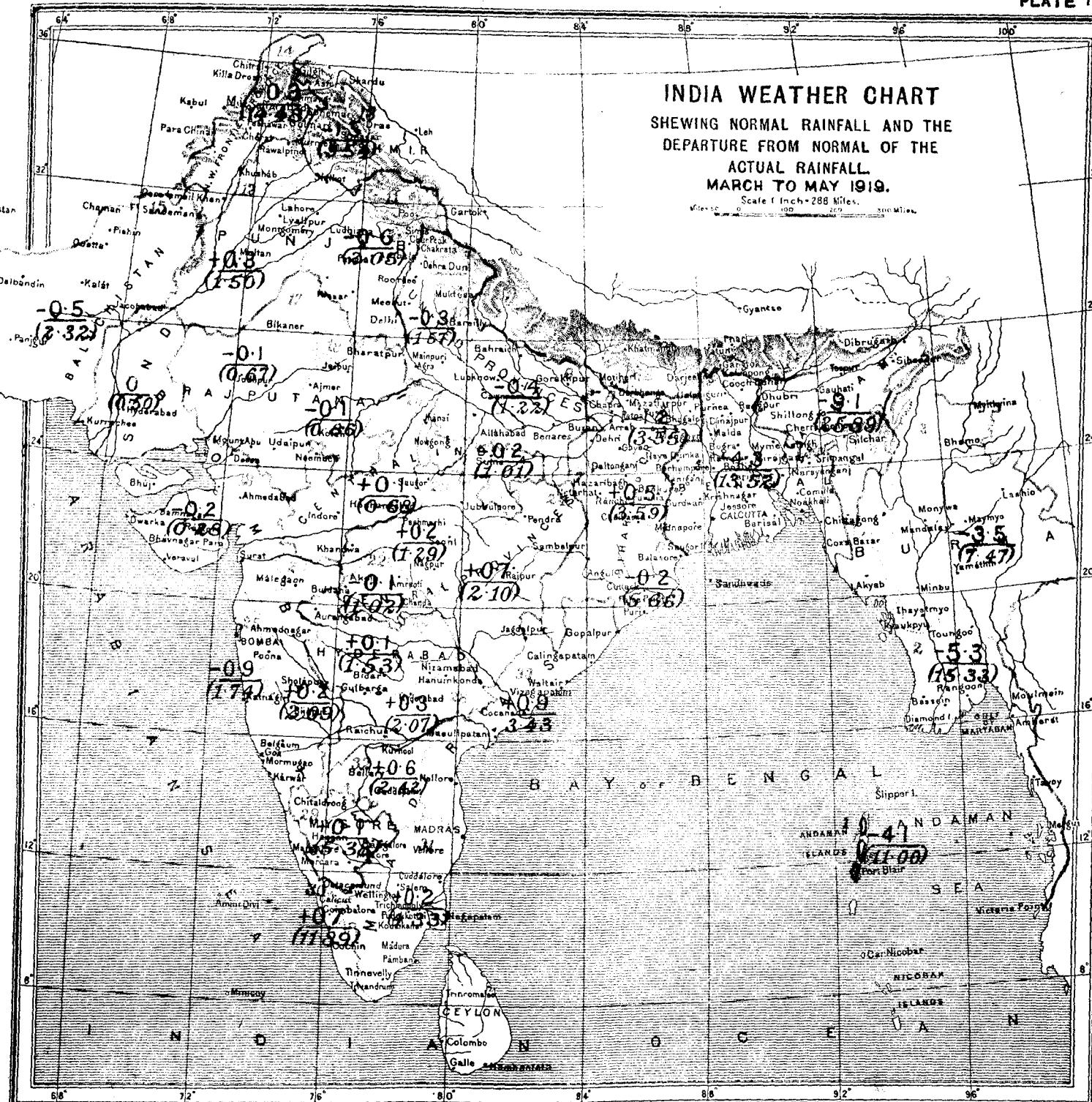
The country is divided into 33 areas as shewn in the list below. The numbers in that list correspond with the red numbers on the chart, and serve to identify the areas.

- |                           |                                 |                             |                         |
|---------------------------|---------------------------------|-----------------------------|-------------------------|
| 1. Bay Islands            | 10. United Provinces, West      | 19. Gujarat                 | 28. Hyderabad, South    |
| 2. Lower Burma            | 11. Punjab, East and North      | 20. Central India, West     | 29. Mysore              |
| 3. Upper Burma            | 12. Do., Southwest              | 21. Do., East               | 30. Malabar             |
| 4. Assam                  | 13. Kashmir                     | 22. Berar                   | 31. Madras, Southeast   |
| 5. Bengal                 | 14. Northwest Frontier Province | 23. Central Provinces, West | 32. Madras, Deccan      |
| 6. Orissa                 | 15. Baluchistan                 | 24. Do., East               | 33. Madras Coast, North |
| 7. Chota Nagpur           | 16. Sind                        | 25. Konkan                  |                         |
| 8. Bihar                  | 17. Rajputana, West             | 26. Bombay, Deccan          |                         |
| 9. United Provinces, East | 18. Rajputana, East             | 27. Hyderabad, North        |                         |



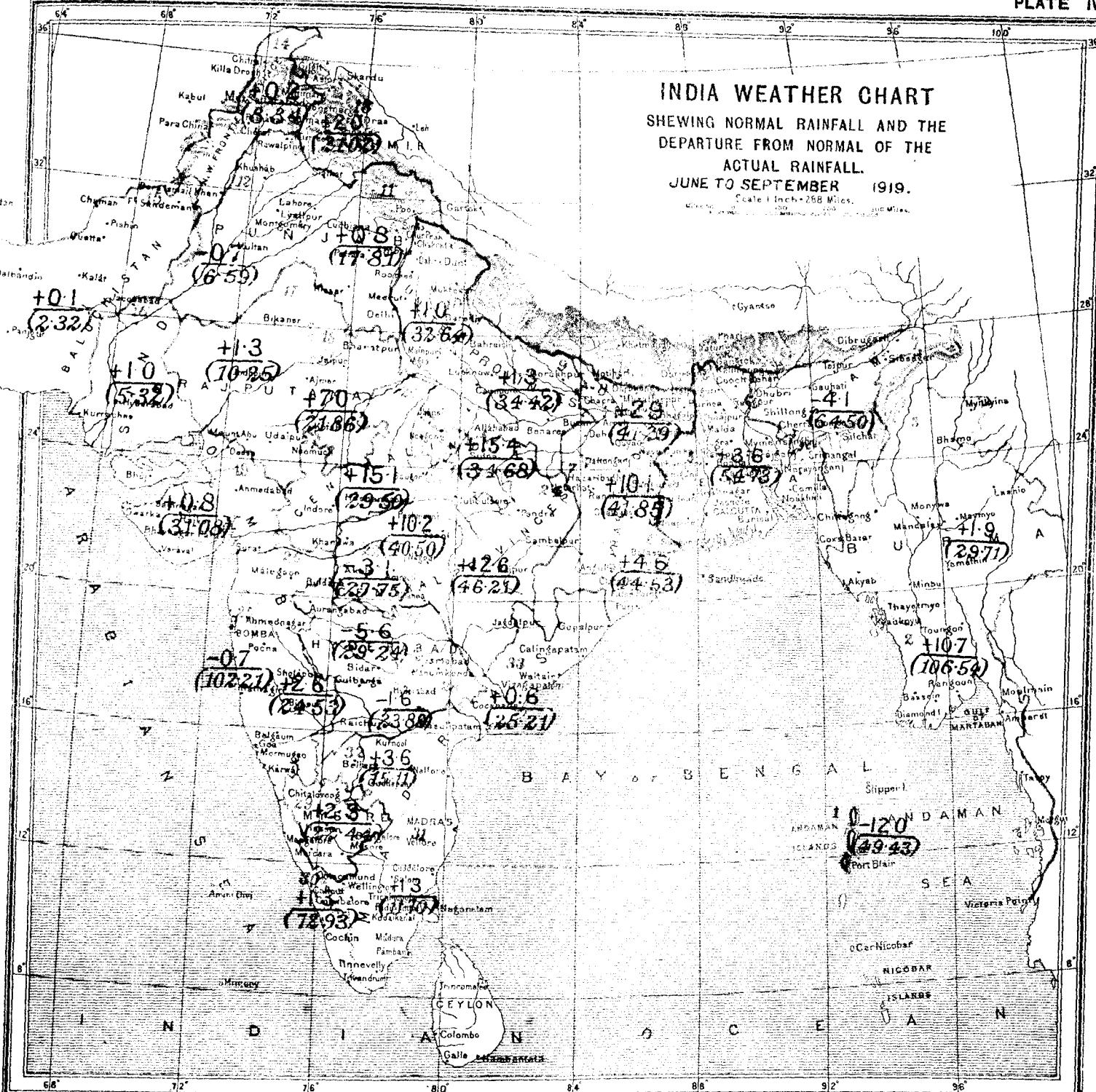
The country is divided into 33 areas as shewn in the list below. The numbers in that list correspond with the red numbers on the chart, and serve to identify the areas. The numbers in brackets on the chart give the average over the divisions of the normal rainfall; the numbers above these give the departures from normal of the average actual rainfall over the divisions.

- |                           |                                 |                             |                         |
|---------------------------|---------------------------------|-----------------------------|-------------------------|
| 1. Bay Islands            | 10. United Provinces, West      | 19. Gujarat                 | 28. Hyderabad, South    |
| 2. Lower Burma            | 11. Punjab, East and North      | 20. Central India, West     | 29. Mysore              |
| 3. Upper Burma            | 12. Do., Southwest              | 21. Do., East               | 30. Malabar             |
| 4. Assam                  | 13. Kashmir                     | 22. Berar                   | 31. Madras, Southeast   |
| 5. Bengal                 | 14. Northwest Frontier Province | 23. Central Provinces, West | 32. Madras, Deccan      |
| 6. Orissa                 | 15. Baluchistan                 | 24. Do., East               | 33. Madras Coast, North |
| 7. Chota Nagpur           | 16. Sind                        | 25. Konkan                  |                         |
| 8. Bihar                  | 17. Rajputana, West             | 26. Bombay, Deccan          |                         |
| 9. United Provinces, East | 18. Rajputana, East             | 27. Hyderabad, North        |                         |



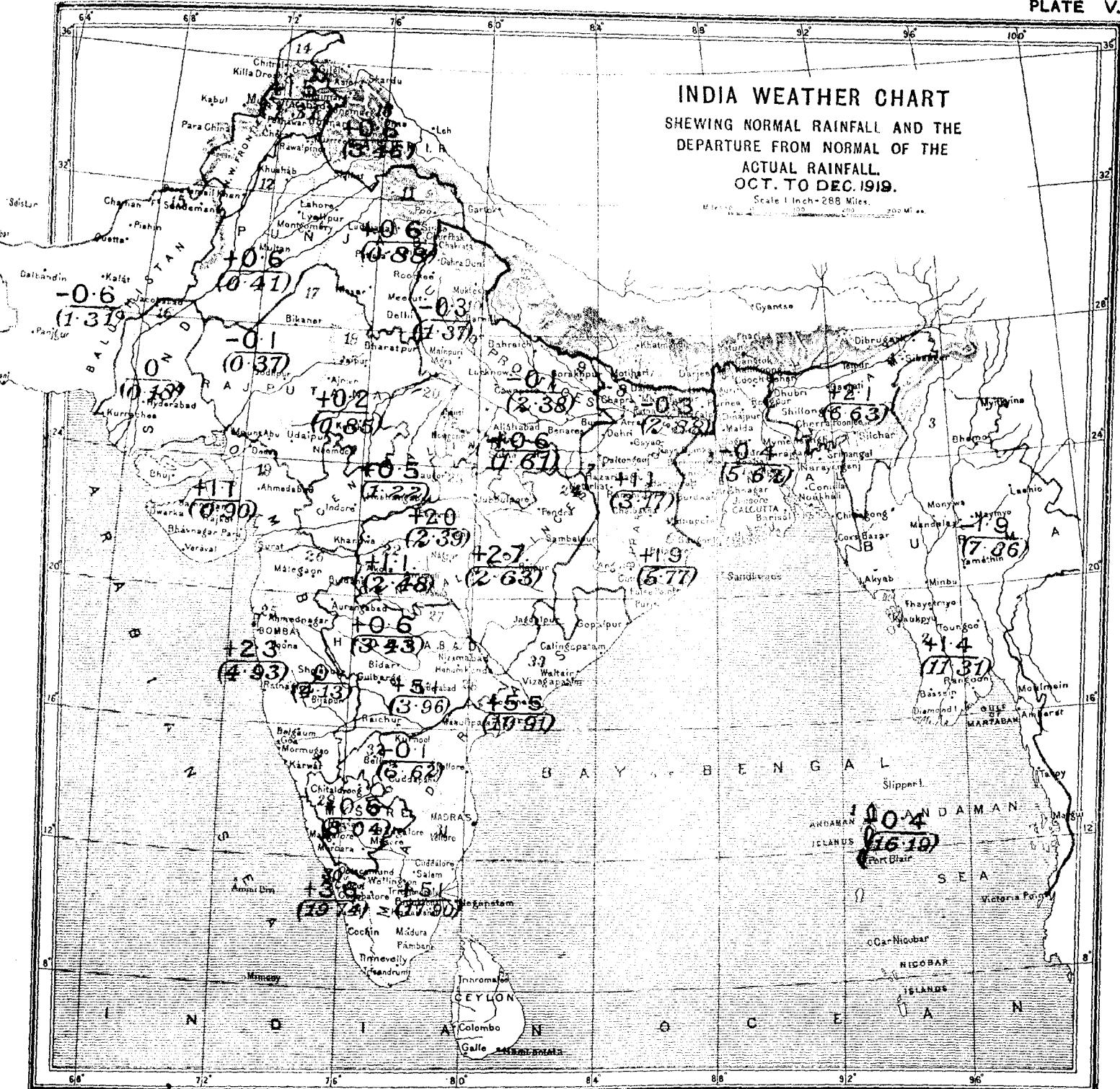
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- |                           |                                 |                             |                         |
|---------------------------|---------------------------------|-----------------------------|-------------------------|
| 1. Bay Islands            | 10. United Provinces, West      | 19. Gujarat                 | 28. Hyderabad, South    |
| 2. Lower Burma            | 11. Punjab, East and North      | 20. Central India, West     | 29. Mysore              |
| 3. Upper Burma            | 12. Do., Southwest              | 21. Do., East               | 30. Malabar             |
| 4. Assam                  | 13. Kashmir                     | 22. Berar                   | 31. Madras, Southeast   |
| 5. Bengal                 | 14. Northwest Frontier Province | 23. Central Provinces, West | 32. Madras, Deccan      |
| 6. Orissa                 | 15. Baluchistan                 | 24. Do., East               | 33. Madras Coast, North |
| 7. Chota Nagpur           | 16. Sind                        | 25. Konkan                  |                         |
| 8. Bihar                  | 17. Rajputana, West             | 26. Bombay, Deccan          |                         |
| 9. United Provinces, East | 18. Rajputana, East             | 27. Hyderabad, North        |                         |



The country is divided into 33 areas as shewn in the list below. The numbers in that list correspond with the red numbers on the chart, and serve to identify the areas. The numbers in brackets on the chart give the average over the divisions of the normal rainfall; the numbers above these give the departures from normal of the average actual rainfall over the divisions.

- |                           |                                 |                             |                         |
|---------------------------|---------------------------------|-----------------------------|-------------------------|
| 1. Bay Islands            | 10. United Provinces, West      | 19. Gujarat                 | 28. Hyderabad, South    |
| 2. Lower Burma            | 11. Punjab, East and North      | 20. Central India, West     | 29. Mysore              |
| 3. Upper Burma            | 12. Do., Southwest              | 21. Do., East               | 30. Malabar             |
| 4. Assam                  | 13. Kashmir                     | 22. Berar                   | 31. Madras, Southeast   |
| 5. Bengal                 | 14. Northwest Frontier Province | 23. Central Provinces, West | 32. Madras, Deccan      |
| 6. Orissa                 | 15. Baluchistan                 | 24. Do., East               | 33. Madras Coast, North |
| 7. Chota Nagpur           | 16. Sind                        | 25. Konkan                  |                         |
| 8. Bihar                  | 17. Rajputana, West             | 26. Bombay, Deccan          |                         |
| 9. United Provinces, East | 18. Rajputana, East             | 27. Hyderabad, North        |                         |

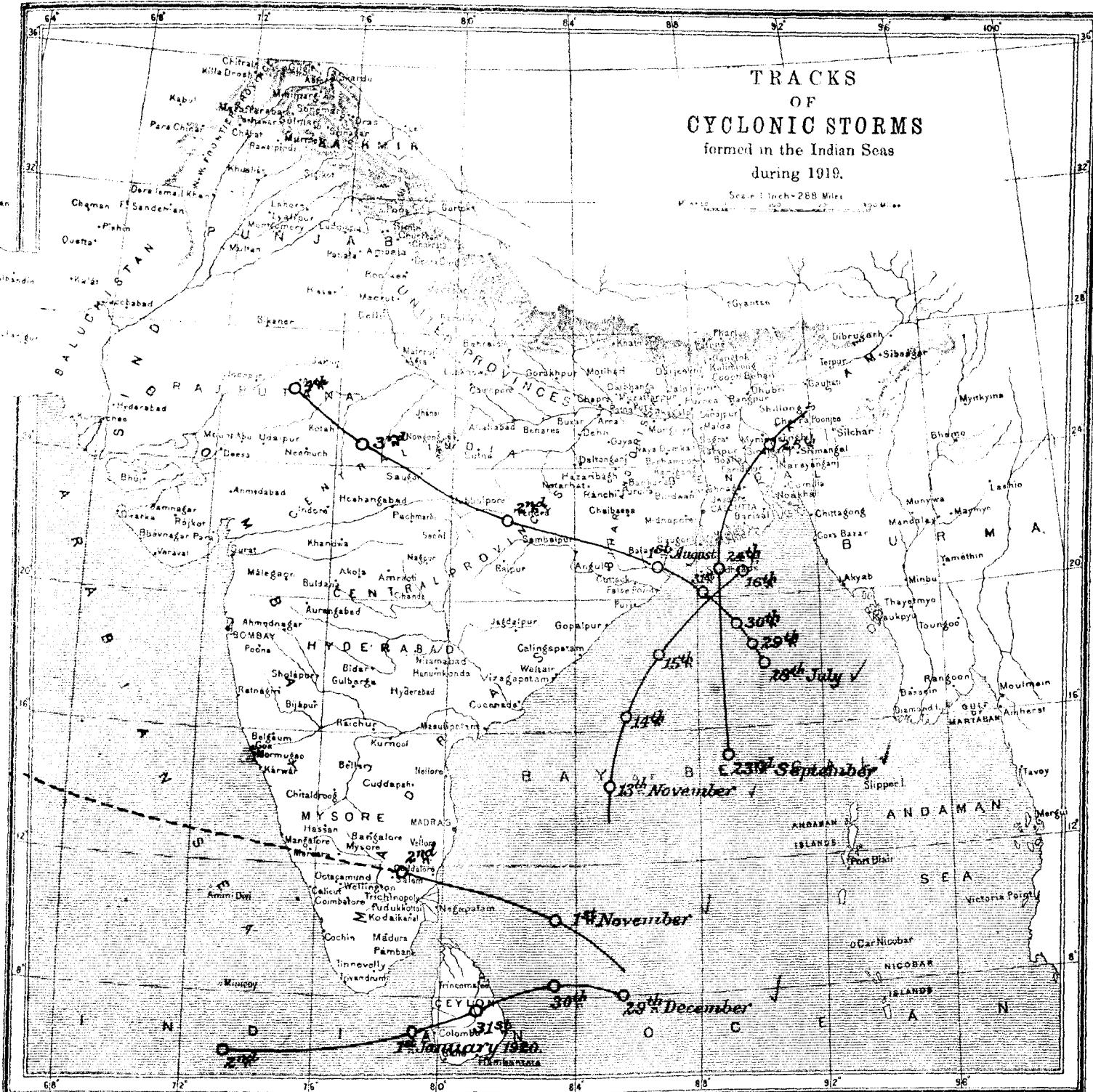


The country is divided into 33 areas as shewn in the list below. The numbers in that list correspond with the red numbers on the chart, and serve to identify the areas. The numbers in brackets on the chart give the average over the divisions of the normal rainfall; the numbers above these give the departures from normal of the average actual rainfall over the divisions.

- |                           |                                 |                             |                         |
|---------------------------|---------------------------------|-----------------------------|-------------------------|
| 1. Bay Islands            | 10. United Provinces, West      | 19. Gujarat                 | 28. Hyderabad, South    |
| 2. Lower Burma            | 11. Punjab, East and North      | 20. Central India, West     | 29. Mysore              |
| 3. Upper Burma            | 12. Do., Southwest              | 21. Do., East               | 30. Malabar             |
| 4. Assam                  | 13. Kashmir                     | 22. Berar                   | 31. Madras, Southeast   |
| 5. Bengal                 | 14. Northwest Frontier Province | 23. Central Provinces, West | 32. Madras, Deccan      |
| 6. Orissa                 | 15. Baluchistan                 | 24. Do., East               | 33. Madras Coast, North |
| 7. Chota Nagpur           | 16. Sind                        | 25. Konkan                  |                         |
| 8. Bihar                  | 17. Rajputana, West             | 26. Bombay, Deccan          |                         |
| 9. United Provinces, East | 18. Rajputana, East             | 27. Hyderabad, North        |                         |

TRACKS  
OF  
CYCLONIC STORMS  
formed in the Indian Seas  
during 1919.

Scale 1 inch = 288 Miles  
1 mile = 160 Kilometres  
1 Kilometre = 0.625 miles



*Tracks of storms in the Arabian Sea which lie outside the boundaries of the map are defined by the following positions:-*

*Storm of May 30<sup>th</sup> to June 2<sup>nd</sup>*

	Lat.N.	Long.E.
30 <sup>th</sup> May	13°	67°
31 <sup>st</sup> "	13½°	65½°
1 <sup>st</sup> June	14½°	63°

2<sup>nd</sup> " 150 miles east of Kuria Muria Islands.

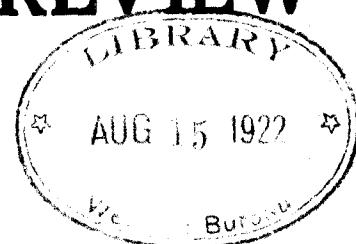
*Storm of November 1<sup>st</sup> to 8<sup>th</sup>*

	Lat.N.	Long.E.
6 <sup>th</sup> November	14°	63°
7 <sup>th</sup> "	14½°	61°
8 <sup>th</sup> "	15°	58°

GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

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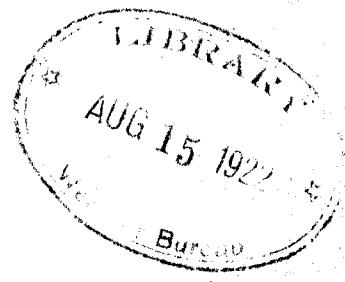
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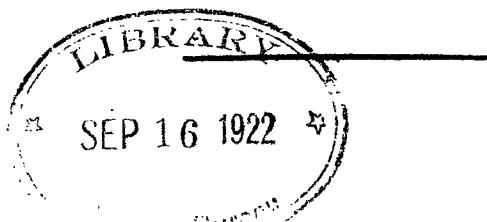
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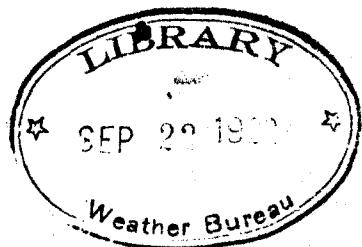
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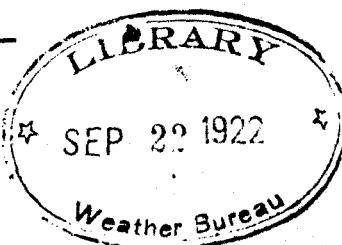
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SEPTEMBER, 1919

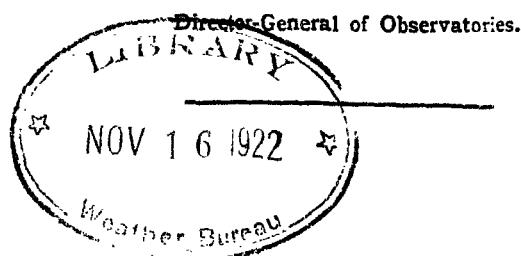
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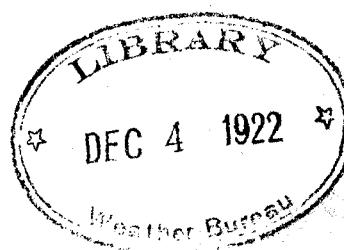
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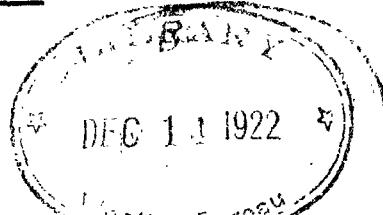
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GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

# MONTHLY WEATHER REVIEW

DECEMBER 1919

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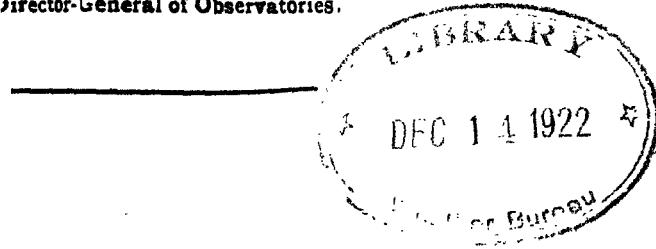
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GILBERT T. WALKER, C.S.I., M.A., Sc.D., F.R.S.,

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GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

# INDIA WEATHER REVIEW

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